GRS Gabriel Roeder Smith & Company
Consultants & Actuaries

THE GENERAL RETIREMENT SYSTEM OF THE CITY OF DETROIT

ANNUAL ACTUARIAL VALUATION OF COMPONENT II

JUNE 30, 2016

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May 19, 2017

Board of Trustees
The General Retirement System of the City of Detroit

Dear Board Members:

This report provides key results from the **Annual Actuarial Valuation** of the annuity and pension liabilities of the General Retirement System of the City of Detroit – Component II benefits. The date of the valuation was **June 30, 2016.**

The City of Detroit filed for bankruptcy on July 18, 2013. A final Plan of Adjustment ("POA") was confirmed on November 7, 2014 and the official exit from bankruptcy was on December 10, 2014. In connection with the POA, very significant changes were made to the benefits that the General Retirement System provides and to the contributions that it will receive. In particular, the benefits provided by the Retirement System were divided into two separate plans, referred to as "Component I" and "Component II." The benefits provided in each component are effective July 1, 2014 and are described in detail in Emergency Manager Order No. 44, dated December 8, 2014. In very general terms, Component I provides benefits for service rendered on and after July 1, 2014 and Component II provides benefits for service rendered prior to July 1, 2014.

This is the third report issued covering Component II benefits. The results provided herein relate solely to the Component II benefits. Component I benefits will be the subject of a separate report. The purposes of the valuation are to measure the funding progress of Component II in accordance with the terms of the POA and to provide actuarially determined contribution amounts, given POA conditions and assumptions for Fiscal Year 2018 for Component II, for comparison with the contribution amounts provided in the POA. The results of the valuation are not applicable for other purposes. In particular, the information provided in this report is not suitable for financial reporting in connection with GASB Statement No. 67. Such information will be provided in a separate report. Information regarding potential benefit restoration as allowed for in the POA will also be provided in a separate report, at the Board's request.

The contribution amounts on page 3 include POA stipulated contributions plus two illustrative contribution amounts from alternate funding policies. Users of this report should be aware that contributions made at these amounts do not guarantee benefit security.

This report was prepared at the request of the Board and is intended for use by the Retirement System and those designated or approved by the Board. This report may be provided to parties other than the System only in its entirety and only with the permission of the Board. GRS is not responsible for unauthorized use of this report.

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

The valuation was based upon records maintained and furnished by the Retirement System staff concerning active members, retirees and beneficiaries, and financial accounts as of the valuation date. Data was checked for year-to-year consistency, but was not audited by the actuary. We are not responsible for the completeness or accuracy of the data. Certain necessary data was not available in time to be considered in this report and, therefore, it was necessary for us to use approximations. Please see related discussion in the Comments section of this report.

The data supplied by the Retirement System was contained in one file this year. However, the reported pays in that file were determined under Component II rules while benefit service was total service (Component I benefit service plus Component II benefit service). We, therefore, collected additional Component I pays and performed several manual adjustments (after confirming with System staff) to create data that could be used for this valuation. More details (as they relate to Component II) are provided in the data section of this report.

The assumptions used in the valuations concerning future experience are summarized in Section D of this report. Except for the assumed rate of investment return, the actuarial assumptions used for the valuation are set by the Board based upon advice of the actuary and other parties. The assumed rate of investment return was set to 6.75% in the POA and is, therefore, a "prescribed assumption set by another party" as discussed in Actuarial Standard of Practice No. 4. In our judgement, all of the actuarial assumptions used for the valuation are reasonable for purposes of the measurement being made.

This report has been prepared by individuals who have substantial experience valuing public sector retirement systems. To the best of our knowledge, this report is complete and accurate and was made in accordance with Actuarial Standards of Practice promulgated by the Actuarial Standards Board.

The signing individuals are independent of the plan sponsor.

David T. Kausch and Judith A. Kermans are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

This report does not evaluate the plan sponsor's ability or willingness to make contributions to the Retirement System. However, employer contributions set forth in the POA are expected to lead to a decrease in the funded status over the next 6 years (as contemplated by the POA); even if all assumptions are met. Therefore, plan sponsor contributions are critical if further benefit reductions are to be avoided.

Respectfully submitted,

David T Kausch

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DTK/JAK/KGA:dj

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SECTION A

VALUATION RESULTS

VALUATION RESULTS

The expected contributions for fiscal year 2015 and beyond are provided in the POA. Subsequent to the POA, the DIA entered into an agreement to pay part of its contribution requirement to the Detroit General Plan in a single lump sum payment in (2016). Furthermore, we understand that the City has modified all of its outstanding UTGO Stub Bonds. The current contribution schedule (from Retirement System staff) showing the DIAs and UTGOs future contribution requirements is below:

Contribution Source
($ millions)

	For DWSD Liabilities		For Other Liabilities					
Fiscal Year	**DWSD**	**Transfers**	**UTGO**	**State***	**DIA**	**Other**	**Transfers from DWSD**	**Total**
2017	$ 45.4	$ (2.5)	$ 18.4	$ -	$ 0.4	$ 22.5	$ 2.5	$ 86.6
2018	45.4	(2.5)	4.5	-	0.4	22.5	2.5	72.7
2019	45.4	(2.5)	-	-	0.4	22.5	2.5	68.3
2020	45.4	(2.5)	-	-	0.4	2.5	2.5	48.3
2021	45.4	(2.5)	-	-	0.4	2.5	2.5	48.3
2022	45.4	(2.5)	-	-	0.4	2.5	2.5	48.3
2023	45.4	(2.5)	-	-	0.4	2.5	2.5	48.3

* *The State's scheduled contributions ended in 2015.*

We have assumed the contributions outlined above will not change. Further, it was assumed that all contributions will be made to the System by the City, regardless of the source. For example, it was assumed that the UTGO paid the City $18.4 million in 2017 and the City contributed $18.4 million to the Retirement System. An estimate of the probability of those payments being made was outside the scope of this project, not required by Actuarial Standards and, therefore, was not made.

In order to develop divisional valuation results in accordance with POA provisions, we were instructed to allocate the above contributions to the various divisions. This was done by allocating DWSD transfer amounts to the General City division and remaining DWSD contributions to the DWSD division; allocating $2.5 million per year to the Library; and allocating remaining contributions to DOT and General in proportion to their unfunded liabilities.
The chart below shows this allocation.

	General	**D.O.T.**	**Subtotal**	**Library**	**DWSD**	**Totals**
	$ Thousands					
Unfunded Liabilities	$ 561,942	$ 199,012	$ 760,954	$ 22,536	$ 315,260	$ 1,098,751
% of Subtotal	73.8%	26.2%	100.0%	N/A	N/A	
FY 2017 Contributions	$ 28,607	$ 10,131	$ 38,738	$ 2,500	$ 45,400	$ 86,638
Transfers	$ 2,500	$ -	$ 2,500	$ -	$ (2,500)	$ -
FY 2017 UAAL Contributions	**$ 31,107**	**$ 10,131**	**$ 41,238**	**$ 2,500**	**$ 42,900**	**$ 86,638**

A different allocation procedure would produce different results. If a different allocation procedure should be used, please let us know and we will revise this report.

VALUATION RESULTS (CONTINUED)

Unfunded Actuarial Accrued Liability (UAAL)+

	($ millions)				
	General City	D.O.T.	DWSD	Library	System Total
UAAL as of June 30, 2016	$ 561.9	$ 199.0	$ 315.3	$ 22.5	$ 1,098.8
Anticipated POA Contribution (EOY)	31.1	10.1	42.9	2.5	86.6
Anticipated Expenses@	-	-	-	-	-
Interest at 6.75%	37.9	13.4	21.3	1.5	74.2
Projected UAAL as of June 30, 2017	$ 568.8	$ 202.3	$ 293.6	$ 21.6	$ 1,086.3
Anticipated POA Contributions for FY2018	**20.8**	**6.5**	**42.9**	**2.5**	**72.7**
Estimated Employer Contributions for FY 2024 #!					
Alternate 1:Level Principal	**$ 78.4**	**$ 28.5**	**$ 13.1**	**$ 1.4**	**$ 121.5**
Alternate 2:Level Dollar##	**$ 61.1**	**$ 22.2**	**$ 10.2**	**$ 1.1**	**$ 94.6**

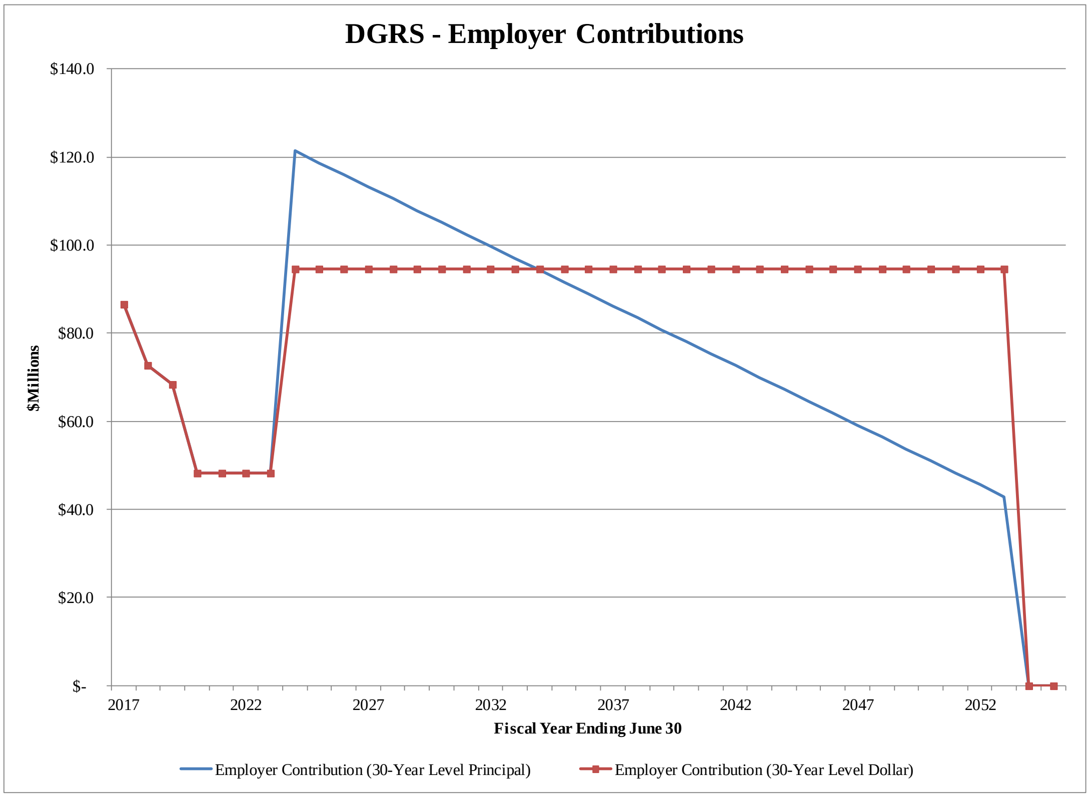
Totals may not add due to rounding.

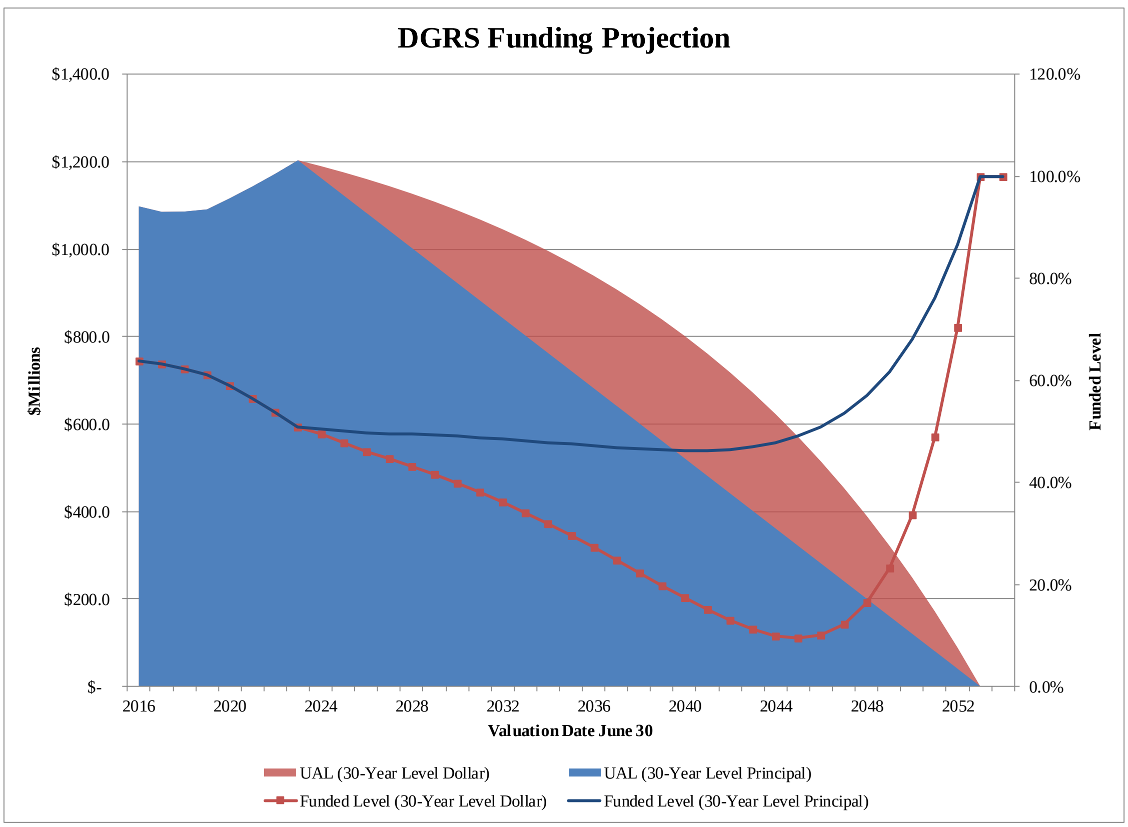
@ *In accordance with Plan Document, the mandated 6.75% rate of return is net of investment and administrative expenses.*
\# *Assuming the POA contributions through 2023 and a 30-year level principal closed amortization thereafter. When determining the Fiscal Year 2024 illustrative amounts, only the total contributions and the DWSD contributions are stipulated in the POA. The remaining amounts were allocated to the other groups as described on page 1. A different allocation would result in different results by group.*
\+ *Because no service is being accrued in Component II, no normal cost contribution is needed.*
! *Total employer contributions, including amounts paid by employer but funded from other sources as required by POA.*
\## ***Contributions at this level may not be sufficient to prevent fund depletion prior to satisfaction of all liabilities. Included at System's request.***

The POA contributions result in a defunding of the plan between now and June 30, 2023, which was contemplated by the POA. In fact, the anticipated POA contributions do not project benefit restoration even if all assumptions are met (including the POA mandated assumed rate of return of 6.75%). Also, the 2018 to 2023 contributions are less than the amount of nominal interest that accrues on the UAAL. The Estimated Employer Contribution for FY 2024 is based on a projection of results assuming only the POA contributions are made and all future experience between the valuation date and FY 2024 is as assumed. Actual experience will result in changes to this estimate and the final result (from the June 30, 2023 actuarial valuation) could be materially different than shown above.

Contributions expected to be paid in FY 2017 include the lump sum payment of the majority of the UTGO obligations under the POA (see schedule of POA contributions on prior page). The accelerated UTGO payments also include the present value of amounts due past FY 2023, resulting in a decrease in the FY 2024 contribution estimate of $0.4 million.

We understand that the City may have set aside additional money to be contributed to one of the pension plans in the future. This potential additional contribution has not been taken into account in this valuation.





Notes: 30-year amortization periods are assumed to begin in FY 2024.
30-year level dollar may result in fund depletion and pay-as-you-go funding before the end of the 30-year period.

VALUATION RESULTS (CONTINUED)

At the request of the Board, in addition to the status valuation calculations on page 2, we illustrate what the funding requirements would be if the FY 2017 contributions were determined by an actuarial valuation.

In the chart below, we illustrate two alternate funding policies for FY 2018. The first policy is an illustration of funding the UAAL over the expected remaining active service life of this group. The second policy is based on a financing period similar to the Board's existing (pre-bankruptcy) policy. The illustrations are intended to show that there are a broad range of possible policies, but are not intended to show a specific recommendation or a minimum or maximum level of contributions.

Funding Policy 1 is based on amortizing the UAAL over the average remaining service life of active members (6 years for DOT; 8 years for all other groups) using level dollar amortization.

Funding Policy 2 is based on amortizing the UAAL with level principal payments over a closed 30-year period plus interest. This method is also known as level principal declining interest amortization.

Illustrative Contribution Shortfall

	($ millions)				
	General City	D.O.T.	DWSD	Library	System Total
(1) Illustrative Contribution for FY 2018 (Funding Policy 1)	$ 94.3	$ 42.1	$ 48.7	$ 3.6	$ 188.7
(2) Illustrative Contribution for FY 2018 (Funding Policy 2)	57.4	20.4	29.6	2.2	109.5
(3) Actual Contributions for FY 2018 (POA)	20.8	6.5	42.9	2.5	72.7
Fiscal Year 2018 Shortfall - Funding Policy 1: (1) - (3)	$ 73.5	$ 35.6	$ 5.8	$ 1.1	$ 116.0
Fiscal Year 2018 Shortfall - Funding Policy 2: (2) - (3)	$ 36.6	$ 13.9	$ (13.3)	$ (0.3)	$ 36.8

Recommendation: We recommend that additional contributions be made to the Component II Plan. While contributions made at levels under Funding Policy I or 2 do not guarantee benefit security of Plan members, increasing contributions would potentially increase the benefit security of Plan members.

VALUATION RESULTS (CONTINUED)

Present Value	June 30, 2016	June 30, 2015
Accrued Pension Liabilities (Employer Financed)		
Retirees and beneficiaries	$2,194,305,695	$2,165,637,549
Inactive members future deferred pensions	305,393,499	224,941,943
Active members	272,852,100	447,834,724
Total accrued pensions	2,772,551,294	2,838,414,216
Pension fund balances	1,775,122,658	1,922,588,277
Unfunded accrued pension liabilities	$ 997,428,636	$ 915,825,939
Accrued Annuity Liabilities (Member Financed)		
Retirees and beneficiaries Future annuities	$ 113,362,921	$ 114,892,726
Member annuities & future refunds	146,377,716	185,807,742
Total accrued annuity liabilities	259,740,637	300,700,468
Annuity fund balances	158,418,649	208,689,931
Unfunded accrued annuity liabilities*	$ 101,321,988	$ 92,010,537
Totals		
Actuarial Accrued Liabilities	**$3,032,291,931**	**$3,139,114,684**
Market Value of Assets	**1,933,541,307**	**2,131,278,208**
Unfunded Actuarial Accrued Liabilities	**$1,098,750,624**	**$1,007,836,476**

** Liabilities are gross before accounting for ASF claw-back. Assets currently include a receivable of approximately $104.6 million related to the ASF claw-back. We believe the receivable is included in the Pension fund balances.*

VALUATION RESULTS (CONCLUDED)

FUNDED RATIO - POA

		Defined Benefit	ASF	Total
A	Actuarial Accrued Liability	$2,885,914,215	$146,377,716	$3,032,291,931
B	Market Value of Assets	$1,787,163,591	$146,377,716	$1,933,541,307
C	Unfunded Actuarial Accrued Liability (A-B)	$1,098,750,624	$ 0	$1,098,750,624
D	Funded Ratio (B/A)	61.9%	100.0%	63.8%

The POA Funded Ratio measurement above is an expected return-based measurement of the pension obligation. It is based upon the mandated 6.75% interest rate assumption (assumption prescribed by another party). It estimates an amount that will be sufficient to provide benefits if the portfolio earns the expected 6.75% return on assets and all other assumptions are met. This measure is appropriate for assessing the need for or amount of future contributions (if all assumptions are met). This measure is not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligation, in other words, of transferring the obligation to a third party in a market value type transaction.

FUNDED RATIO - SOLVENCY

		Defined Benefit	ASF	Total
A	Market-Based Liability	$4,372,072,209	$146,377,716	$4,518,449,925
B	Market Value of Assets	$1,787,163,591	$146,377,716	$1,933,541,307
C	Unfunded Actuarial Accrued Liability (A-B)	$2,584,908,618	$ 0	$2,584,908,618
D	Funded Ratio (B/A)	40.9%	100.0%	42.8%

The Solvency Funded Ratio is a market-based measurement of the pension obligation. It estimates the amount the plan would need to invest in low risk securities to provide the benefits with greater certainty. For this purpose, the solvency liability is computed at 2.85% interest as of June 30, 2016, based on the long-term municipal bond rate ("20-Bond GO Index" rate from the Bond Buyer Index as of June 30, 2016). We are not able to assess the credit quality of the plan sponsor and, as such, no adjustment has been made for the credit quality of the plan sponsor. This measure may not be appropriate for assessing the need for or amount of future contributions. This measure may not be appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligation.

The difference between the two measures illustrates the savings the sponsor anticipates by taking on the risk in a diversified portfolio.

COMMENTS

Experience

Experience was less favorable than assumed during the year ending June 30, 2016. The chart below shows the estimated gain by division.

Development of Actuarial Gain/(Loss)

	($ millions)				
	General City	D.O.T.	DWSD	Library	System Total
(1) UAAL as of June 30, 2015 (BOY)	$ 507.9	$ 183.2	$ 297.3	$ 19.4	$ 1,007.8
(2) Actual POA Contribution (EOY)	50.4	9.0	42.9	2.5	104.8
(3) Interest at 6.75%	34.3	12.4	20.1	1.3	68.0
(4) Projected UAAL* as of June 30, 2016	$ 491.8	$ 186.6	$ 274.5	$ 18.2	$ 971.1
(5) Actual UAAL* as of June 30, 2016	561.9	199.0	315.3	22.5	1,098.8
Gain (Loss): (4) - (5)	$ (70.1)	$ (12.4)	$ (40.8)	$ (4.3)	$ (127.7)
Gain (Loss) From Investments	$ (87.5)	$ (16.5)	$ (34.0)	$ (5.8)	$ (143.8)
Gain (Loss) From Liabilities	$ 17.4	$ 4.0	$ (6.8)	$ 1.5	$ 16.1

* *Unfunded actuarial accrued liability.*

The main source of the loss was investment activity. Other gains and losses during the year were smaller and mostly offsetting and include gains from terminations and losses from retirements and mortality.

The estimated FY 2024 contributions are very sensitive to changes in year-to-year experience. The chart below reconciles our estimate from the June 30, 2015 valuation to our estimate from this valuation (June 30, 2016).

Reconciliation of Projected June 30, 2024 Contributions

	($ millions)				
	General City	D.O.T.	DWSD	Library	System Total*
Estimated FY 2024 Employer Contribution (Level Principal) from 6/30/15 Valuation	$ 68.6	$ 25.6	$ 6.6	$ 0.7	$ 101.5
Experience Loss of $127.7 Million.	11.2	2.0	6.5	0.7	20.3
Modified UTGO Contributions	(0.3)	(0.1)	-	-	(0.4)
Actual FY 2016 Contribution above Expected	(1.0)	1.0	-	-	-
Estimated FY 2024 Employer Contribution (Leval Principal) from 6/30/16 Valuation	$ 78.5	$ 28.5	$ 13.1	$ 1.4	$ 121.5

**Totals may not add due to rounding.*

COMMENTS (CONTINUED)

ASF Claw-Back Data

For the June 30, 2015 valuation, the Systems auditors determined a receivable in accordance with GAAP accounting that was included in the reported June 30, 2015 assets. The reported assets for the June 30, 2016 status valuation also included a receivable for the remaining claw-back payments. While we did not audit any of the assets, we reviewed the change in this receivable for reasonableness.

Annuity Reserve Fund (ARF)

In general, assets were reviewed for reasonableness. During that review, we discovered that the ARF was not credited any interest and there were no reported transfers. As a result, we recommend that all the reserve amounts be reviewed.

Experience

Experience during the year was less favorable than assumed resulting in an experience loss. The primary source of the experience loss was a net investment return of (0.8)%, well below the prescribed net investment return of 6.75%. The experience loss from investments was partially offset by experience gains from liabilities, primarily from more terminations than expected. Liability gains occurred in every division except DWSD. In that division, more retirements than expected resulted in overall liability losses. For the plan in total, there was a small liability loss due to retiree mortality.

Plan Provisions

Section B-1 (b) of the plan provides that members who terminate employment and are subsequently rehired before incurring a six-year break in service are eligible to earn additional vesting and eligibility service under the plan. For purposes of this valuation, we have assumed no terminated members are rehired.

Great Lakes Water Authority (GLWA) Members

The Retirement System does not currently identify GLWA employees. The DWSD division had a large member of terminations during the year. We have discussed with the Board's legal counsel whether or not GLWA employees are considered active members for purposes of Component II and do not have a definitive answer. We have treated these numbers as terminated members who are entitled to either a vested deferred benefit or a refund of ASF contributions. We recommend the Board's legal counsel research this point. If it is determined that these members are still active and are continuing to earn vesting and eligibility service under the plan, then we recommend the Retirement System work with GLWA to identify these members.

ASF Interest Credits

The ASF fund cannot be credited with more than 5.25% (or the total fund earnings if less) in accordance with the plan provisions. We understand that any future excess earnings that may result will be transferred to Component I assets (to the extent needed for funding Transition Liabilities) and, therefore, we did not model any such transfers as part of this valuation. The estimated present value of future transfers may be modelled at the Board's request. Any adjustment to the Component II liability would be equally offset by a receivable Component I asset. Note that interest credits to the ASF are determined by plan provisions and Board policy as calculated by Retirement System staff.

COMMENTS (CONTINUED)

Data Issues and Approximations

The data provided for this valuation did not reflect the plan freeze or the various cuts to active member benefits that were instituted in connection with the POA. Consequently, it was necessary for us to use approximations to estimate the frozen accrued benefits. While in our judgement the approximations are reasonable, an estimate of the potential range of error in those approximations could not be performed without considerable additional work and, therefore, was outside the scope of this study. It is important that complete data be provided as soon as possible to minimize the probability of an important decision being made based upon wrong information. We would be pleased to redo this valuation with actual frozen benefit data, if such can be made available.

The benefit commencement age for deferred members is based on data reported with the 2012 valuation, where available, or the rules shown on page 15, if data was not available. If the commencement dates provided in 2012 were not used in this valuation and commencement was determined solely on the values shown on page 15, accrued liabilities would be approximately $20 million less than shown herein.

Service Data reported for approximately 100 members with duty-disability benefits who have not yet converted to normal retirement increased unexpectedly from service reported for the June 30, 2015 valuation. We understand that the System is going through a data audit and these changes may be related to that activity. This increase in service (which offsets our estimate of the converted benefit) resulted in an increase in accrued liabilities of approximately $4 million.

Actuarial Assumptions

In the past, the System routinely had five-year experience studies in accordance with the ordinance. The last scheduled experience study for the period from July 1, 2007 through June 30, 2012 was postponed due to the bankruptcy. Moreover, since the uncertainty at the City during the bankruptcy may have led to member behavior that was not representative of long-term trends, we conducted a review of the mortality assumption only in 2013. We recommend that the System return to its prior periodic schedule for the next experience study for the period from July 1, 2012 through June 30, 2017. Alternatively, in order to avoid distortions in activity resulting from the bankruptcy, the next experience study could be scheduled to begin after the city emerged from bankruptcy using the period July 1, 2015 through June 30, 2020.

Restoration

This valuation assumes no future restoration of Component II benefits (consistent with the expectation of the POA). Any future restoration will be reflected beginning in the next valuation after being granted.

DWSD (Water/Sewer) Projections

Based on this valuation, the DWSD (Water/Sewer) division is not expected to be fully funded by 2024. As a result, their contributions will continue in FY 2024 (see page 2 for estimated FY 2024 contributions).

COMMENTS (CONCLUDED)

Future Results

While FY 2017 investment performance has not yet been provided to us, the S&P 500 and the DOW have so far both returned more than 6.75%. If the Retirement System's experience is similar, this will result in upward pressure on the funded status and downward pressure on the FY 2024 contribution requirements (below what is shown in this report).

The POA mandated contributions for FY 2018 and beyond are expected to defund the Retirement System, even if all assumptions are realized. In FY 2018, the POA mandated contributions are less than the interest on the projected UAAL. This defunding was contemplated in the POA.

We understand that the City has engaged an actuary to explore funding policies. We commend this action and repeat our recommendations to the Board from prior valuations.

Recommendation 1

We recommend that every potential action be taken to generate contributions to the Retirement System above and beyond those provided in the POA.

Recommendation 2

We recommend that a study be undertaken to develop a funding policy for FY 2024 and beyond. The increase in contributions that is expected at that time is so significant that it cannot be ignored until then (even though this is contemplated in the POA). All stakeholders should agree on the funding method well before that date comes. If not, there could be a significant risk of contribution defaults and/or benefit insecurity.

Recommendation 3

We recommend that the System compute frozen accrued benefits as soon as possible and provide them for the June 30, 2017 valuation. If important decisions are to be made based on this valuation, we recommend further that the valuation be redone based upon actual computed frozen accrued benefits.

Conclusion

The POA contributions fall short of contributions that would result from either of the funding policies illustrated in this report (page 4). The FY 2024 contribution is expected to be very high compared to City contributions in the immediately preceding years. Planning for the FY 2024 contribution level is very important.

LIABILITY BY DIVISION - POA

($Thousands)

	General	D.O.T.	DWSD	Library	Totals
Accrued Pension Liabilities					
Retirees and beneficiaries	$1,205,537	$293,234	$636,246	$ 59,289	$2,194,306
Inactive members future deferred pensions	175,936	37,515	86,695	5,247	305,393
Active members	151,314	60,275	36,003	25,260	272,852
Total accrued pension liabilities	1,532,787	391,024	758,944	89,796	2,772,551
Pension fund balances	1,028,396	199,878	475,850	70,998	1,775,122
Unfunded accrued pension liabilities	504,391	191,146	283,094	18,798	997,429
Accrued Annuity Liabilities					
Retirees and beneficiaries#	62,571	10,174	36,864	3,753	113,362
Members annuities & future refunds	75,400	38,508	23,988	8,482	146,378
Total accrued annuity liabilities	137,971	48,682	60,852	12,235	259,740
Annuity fund balances	80,420	40,815	28,686	8,497	158,418
Unfunded accrued annuity liabilities#	57,551	7,867	32,166	3,738	101,322
Totals					
Actuarial Accrued Liabilities	1,670,758	439,706	819,796	102,031	3,032,291
Accrued Assets	1,108,816	240,693	504,536	79,495	1,933,540
Funded Ratio	66.4%	54.7%	61.5%	77.9%	63.8%
Unfunded Actuarial Accrued Liabilities	**$ 561,942**	**$199,013**	**$315,260**	**$ 22,536**	**$1,098,751**

Totals may be off slightly due to rounding.

Liabilities are shown gross, before the annuity savings claw-back. The pension fund balance include a receivable of approximately $104.6 million for future claw-back payments.

SECTION B

FUND ASSETS

STATEMENT OF PLAN ASSETS
(REPORTED ASSETS AT MARKET VALUE)

Market Value - June 30, 2016	
Cash and cash equivalents	$ 114,972,767
Global equities	843,597,171
Global fixed income	98,577,668
Real assets	390,579,155
Private equities	101,770,053
Diversifying strategies	248,182,711
Accrued investment income	1,328,554
Receivables from investment sales	10,217,977
Other receivable	683,705
ASF recoupment receivable	104,575,110
Notes receivable from participants	8,179,203
Restricted assets	24,803,369
Asset-backed securities	25,924,215
Repurchase agreements	177,644
Corporate floating rate	58,948,338
Capital assets	202,672
Accrued expenses	(2,817,104)
Payables for Investment purchases	(10,963,346)
Due to the City of Detroit	(454,105)
Amounts due broker under securities lending arrangements	(84,294,535)
Other liabilities	(649,915)
Total Current Assets	**$ 1,933,541,307**

MARKET VALUE OF ASSETS

Reserve Accounts (Market Value)

Funds	Fund Balances June 30, 2016	Fund Balances June 30, 2015
Annuity Savings	$ 146,377,716	$ 185,807,742
Annuity Reserve	12,040,933	22,882,189
Pension Accumulation	(158,885,695)	(88,967,115)
Pension Reserve	1,934,008,353	2,011,555,392
Total Fund Balances	**$ 1,933,541,307**	**$2,131,278,208**

Revenues and Expenditures (Market Value)

	Pension Funds	Annuity Funds	Total Funds
Balance, July 1, 2015	$1,922,588,276	$208,689,932	$2,131,278,208
Prior valuation audit adjustment	(1,218,142)	1,218,145	3
Market Value July 1, 2015	$1,921,370,134	$209,908,077	$2,131,278,211
Revenues			
Member Contributions	0	0	0
Employer Contributions	67,900,000	0	67,900,000
DIA Contributions	32,886,828	0	32,886,828
State of Michigan Contributions	0	0	0
UTGO Contributions	4,005,829	0	4,005,829
ASF Recoupment Interest	4,585,453	0	4,585,453
Investment Income (Net)	(21,614,102)	9,163,555	(12,450,547)
Other	1,360,330	0	1,360,330
Transfers	0	0	0
Total	$ 89,124,338	$ 9,163,555	$ 98,287,893
Expenditures			
Benefit Payments	231,629,195	10,841,256	242,470,451
Refund of Member Contributions	0	49,811,728	49,811,728
Expenses	3,742,618	0	3,742,618
Total	$ 235,371,813	$ 60,652,984	$ 296,024,797
Market Value June 30, 2016	$1,775,122,659	$158,418,648	$1,933,541,307
Market Value Rate of Return (Net of all expenses)	(1.4)%	5.1%	(0.8)%

Rates of return are dollar weighted estimates assuming mid-year cash flows.

Note that interest credits to the ASF (and other reserves) are determined by plan provisions and Board policy (including any timing issues) as calculated by Retirement System staff.

ALLOCATION OF ASSETS USED FOR VALUATION BY RESERVE ACCOUNT AND DIVISION

	June 30, 2015	Adjustment	Contributions	Benefit Payments	Investment Return (net of all expenses)	June 30, 2016
Annuity Savings Fund						
General	$ 80,277,285	$ 1,218,149	$ 0	$ (10,133,273)	$ 4,038,086	$ 75,400,247
D.O.T.	40,310,783	0	0	(3,862,500)	2,059,559	38,507,842
DWSD	56,407,348	(1)	0	(35,033,574)	2,613,784	23,987,557
Library	8,812,326	(1)	0	(782,381)	452,126	8,482,070
Totals	185,807,742	1,218,147	0	(49,811,728)	9,163,555	146,377,716
Annuity Reserve Fund						
General	11,080,145	0	0	(6,060,020)	0	5,020,125
D.O.T.	3,291,341	0	0	(983,947)	0	2,307,394
DWSD	7,998,367	0	0	(3,299,677)	0	4,698,690
Library	512,336	0	0	(497,612)	0	14,724
Totals	22,882,189	0	0	(10,841,256)	0	12,040,933
Pension Accumulation Fund						
General	(19,808,387)	(83,409,546)	50,399,993	0	(12,276,649)	(65,094,589)
D.O.T.	(47,832,793)	(26,086,197)	8,992,664	0	(2,175,984)	(67,102,310)
DWSD	(41,886,578)	(41,891,695)	42,900,000	0	(4,121,197)	(44,999,470)
Library	20,560,643	(3,912,862)	2,500,000	0	(837,107)	18,310,674
Totals	(88,967,115)	(155,300,300)	104,792,657	0	(19,410,937)	(158,885,695)
Pension Reserve Fund						
General	1,146,128,325	80,225,533	0	(132,862,964)	0	1,093,490,894
D.O.T.	272,234,595	26,086,197	0	(31,340,008)	0	266,980,784
DWSD	537,718,866	43,857,564	0	(60,727,313)	0	520,849,117
Library	55,473,606	3,912,862	0	(6,698,910)	0	52,687,558
Totals	2,011,555,392	154,082,156	0	(231,629,195)	0	1,934,008,353
Retirement System Totals	$2,131,278,208	$ 3	$104,792,657	$ (292,282,179)	$ (10,247,382)	$1,933,541,307

SECTION C

PARTICIPANT DATA

RECONCILIATION OF RAW DATA

ACTIVE MEMBERS

A)	Number reported in GC_Benefits table:	6,025
B)	Excluded due to inactive status:	(619)
C)	Records for 36th District Court Judges:	(29)
D)	Non Benefit Class Code*:	(2)
E)	Active members hired after June 30, 2014:	(999)
F)	Adjustments per data questions:	(1,140)
G)	Number of records to value:	3,236

* *We understand that records with certain class codes are not eligible to participate in the Plan.*

INACTIVE VESTED MEMBERS

A)	Number of records reported on data file:	3,275
B)	Records with service less than 8 years:	(126)
C)	Listed with Police and Fire revenue group:	(12)
D)	Adjustments per data questions:	451
E)	Number of records to value:	3,588

RETIRED MEMBERS AND BENEFICIARIES

A)	Number of records reported on data file:	41,701
B)	Number of records in Police and Fire plan:	(15,447)
C)	Records not currently in receipt of benefits@:	(14,203)
D)	Component I (Hybrid) Records#:	(125)
E)	Number of records valued:	11,926

\# *These records all have a corresponding Legacy Plan record.*
@ *May include individuals whose benefits ceased in prior years.*

Data Approximations and Assumptions

Active

For active members, AFC amounts and total service as of June 30, 2016 (rather than at the freeze date) were reported. For purposes of this valuation, we matched the June 30, 2016 actives to the active data reported for the June 30, 2014 valuation to obtain the AFC and benefit service amounts as of June 30, 2014. In cases where June 30, 2014 AFC was not available, June 30, 2016 AFC was used.

Deferred

Data provided for deferred vested members was incomplete. As part of the processing of deferred member data, we attempted to fill in missing data with data from; 1) the previous year's deferred file; 2) the current year's active file and/or; 3) the previous year's active files. In cases where AFC was still incomplete after comparing to other files, we used $30,000 to estimate the AFC. Since vesting service is not directly provided on the file, we estimated vesting service based on reported benefit service increased by the elapsed time between date of termination and June 30, 2014. Members with estimated vesting service of less than 8 years were assumed to be non-vested and were not valued. The commencement date for benefits for deferred members was last provided with the 2015 valuation data. That data was used, if available. If it wasn't available, we estimated the commencement date with the following rules:

- Age 55 if 30 or more years of service and hired before July 1986;
- Age 60 if less than 30 years of service, but more than 10 years of service and hired before 1986; and
- Age 62 for all others.

Entire amount of deferred benefits was assumed to commence at the same time regarding the date of hire.

Retired and Beneficiary

It is our understanding that the current pension amount provided in the retiree data includes the 4.5% reduction as mandated in the POA. However, the other pension amounts provided in the data (original pension amount, equated pension amount, and prior year's pension amount) did not reflect the 4.5% reduction and, as such, were reduced by 4.5% when valuing any related liability. Other adjustment assumptions include:

- In cases where the benefit is identified to be a joint and survivor benefit and a beneficiary is not listed in the data, it was assumed that male spouses were 3 years older than females;
- For non-equated members that elected a pop-up benefit, the pop-up amount is estimated based on the chosen option and benefit amounts provided in the data;
- Benefits for dependent children are assumed to cease at age 21; and
- For non-converted disabled members, converted benefits are:
    - assumed to commence at age 60; and
    - estimated, based on reported service and projected service from the date of disability to age 60.

SUMMARY OF MEMBER DATA
JUNE 30, 2016

Active Members

	General	D.O.T.	DWSD	Library	Totals^
Number	1,788	674	502	272	3,236
% Change in active members	(24.6)%	(13.7)%	(59.6)%	(6.8)%	(31.0)%
Annual payroll ($ millions)	$ 83.9	$ 25.5	$ 22.9	$ 11.7	$ 143.9
Average pay	$46,912	$37,815	$45,546	$42,844	$44,463
% Change in average pay	8.3 %	4.9 %	(1.9)%	3.0 %	3.8 %

^ *May not add due to rounding.*

Retired Members and Survivor Beneficiaries

	General	D.O.T.	DWSD	Library	Totals
Number	7,151	1,630	2,821	324	11,926
Annual benefits ($ millions) #	$ 135.1	$ 30.9	$ 66.0	$ 7.1	$ 239.1
Average benefits #	$18,896	$18,943	$23,411	$21,763	$20,048
% Change in reported average benefit	0.5 %	0.4 %	0.3 %	(0.6)%	0.8 %

Includes annuities. Does not include reductions resulting from the annuity claw-backs.

Inactive Vested Members

	General	D.O.T.	DWSD	Library	Totals
Number	2,071	423	1,014	80	3,588
Average FAC	41,230	42,082	48,411	31,923	43,153
Average service	15.9	15.9	15.8	14.5	15.9
Annual benefits ($ millions)	$ 22.7	$ 4.6	$ 12.7	$ 0.6	$ 40.7
Average benefits	$10,971	$10,992	$12,542	$7,809	$11,347
% Change in average service	0.7 %	2.1 %	2.2 %	(1.5)%	1.1 %
% Change in average FAC	2.1 %	1.1 %	14.6 %	(0.5)%	6.0 %

ACTIVE MEMBERS AS OF JUNE 30, 2016
BY ATTAINED AGE AND YEARS OF SERVICE
RETIREMENT SYSTEM TOTALS

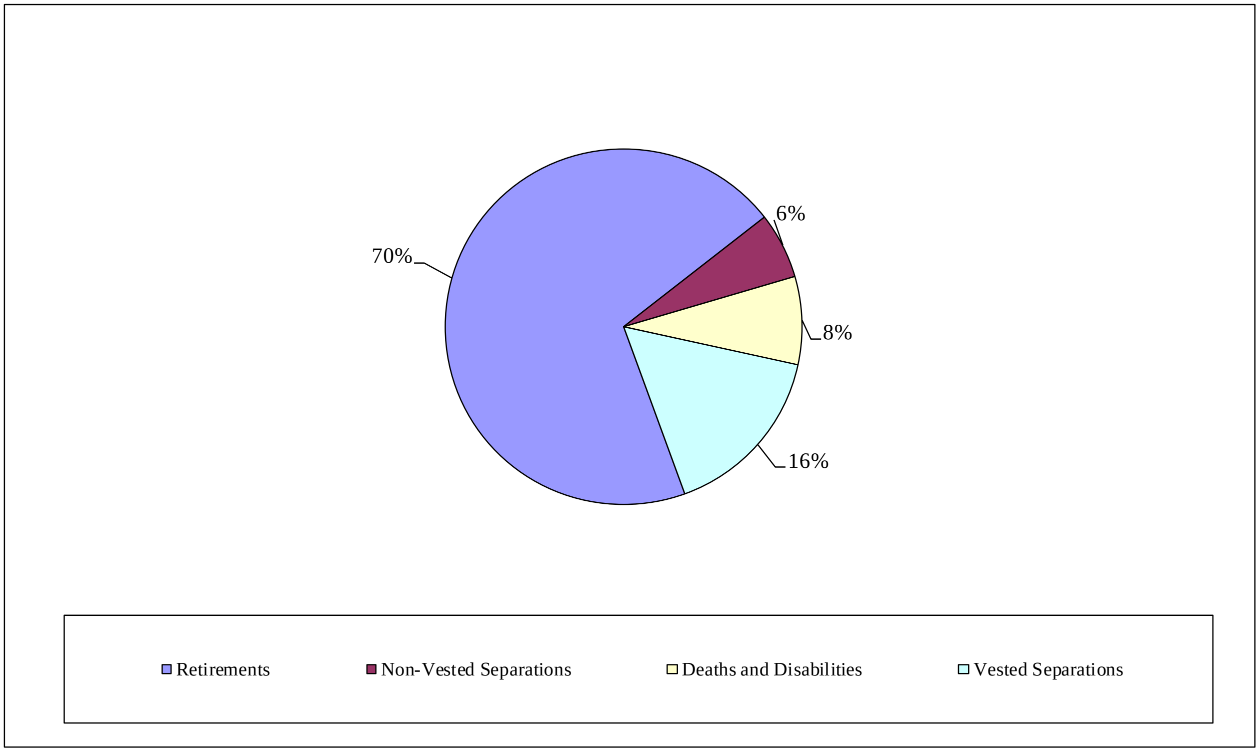
Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
Under 20	0							0	$ 0
20-24	24	2						26	701,851
25-29	59	14	1					74	2,262,951
30-34	31	43	19	8				101	3,964,979
35-39	54	65	54	50	4			227	8,612,861
40-44	62	81	70	107	35	2		357	15,309,709
45-49	42	90	89	184	113	44	5	567	26,126,621
50-54	40	68	84	177	146	139	50	704	32,433,790
55-59	41	59	79	152	126	163	106	726	33,363,116
60-64	27	42	32	69	50	52	62	334	15,546,822
65-69	3	17	13	18	8	10	10	79	3,673,644
70-74	3	2	2	8	2	4	9	30	1,394,408
75-79	1	0	3	4	0	2	1	11	491,970
Totals	**387**	**483**	**446**	**777**	**484**	**416**	**243**	**3,236**	**$143,882,722**

Group Averages:

Age:	50.3 years
Service:	16.8 years
Annual Pay:	$44,463

Service shown in this schedule is vesting/eligibility service as of June 30, 2016. Frozen benefit service as of June 30, 2014 was not provided in the June 30, 2016 data and was estimated from the data previously submitted for the June 30, 2014 valuation.

EXPECTED TERMINATIONS FROM ACTIVE EMPLOYMENT FOR CURRENT ACTIVE MEMBERS



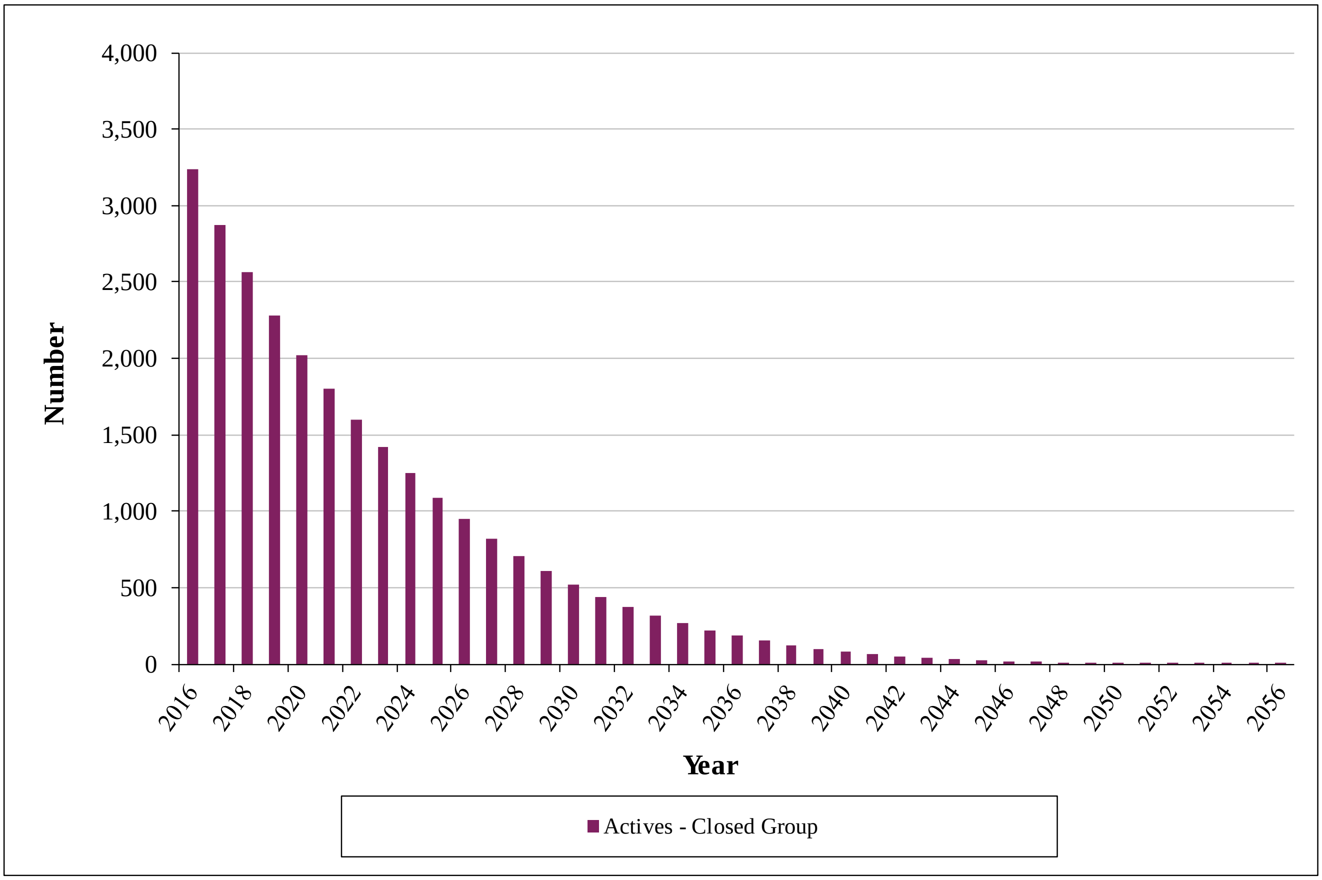
The chart shows the expected future development of the present population in simplified terms. The Retirement System presently covers 3,236 active members. Eventually, 185 people are expected to terminate covered employment prior to retirement and forfeit eligibility for an employer provided benefit. 2,804 people are expected to receive monthly retirement benefits either by retiring directly from active service, or by retiring from vested deferred status. 247 people are expected to become eligible for benefits as a result of death-in-service or disability.

Actual verses expected retirements for the 2016 fiscal year is shown below:

Year Ended June 30,	Expected	Actual
2016	280	356

EXPECTED TERMINATIONS FROM ACTIVE EMPLOYMENT FOR CURRENT ACTIVE MEMBERS (CONCLUDED)

Shown below is a graph of projected active members remaining in the Retirement System. It is projected that less than half of the current active population will be active by 2022.



RETIREES AND BENEFICIARIES JUNE 30, 2016
TABULATED BY ATTAINED AGES
RETIREMENT SYSTEM TOTALS

	Age & Service#		Disability		Death-in-Service		Totals	
Attained Ages	No.	Monthly Allowances	No.	Monthly Allowances	No.	Monthly Allowances	No.	Monthly Allowances
Under 20*	10	$ 13,786	0	$ 0	4	$ 2,403	14	$ 16,189
20-24	2	4,628					2	4,628
25-29	10	7,710					10	7,710
30-34	5	2,761	0	0			5	2,761
35-39	11	7,939	5	2,158			16	10,097
40-44	14	11,382	17	10,076	2	1,387	33	22,845
45-49	80	102,453	39	22,916	6	5,760	125	131,129
50-54	325	569,148	95	67,035	12	14,534	432	650,717
55-59	860	1,884,129	216	178,740	39	46,855	1,115	2,109,724
60-64	1,745	3,478,477	239	324,722	34	39,564	2,018	3,842,763
65-69	2,246	4,110,949	194	213,886	47	79,261	2,487	4,404,096
70-74	1,620	2,813,368	117	123,482	37	52,447	1,774	2,989,297
75-79	1,129	1,648,234	75	66,923	34	38,967	1,238	1,754,124
80-84	890	1,195,134	37	28,976	35	40,068	962	1,264,178
85-89	827	979,121	27	19,421	57	44,505	911	1,043,047
90-94	539	584,588	26	19,377	31	26,832	596	630,797
95 and Over	167	143,662	4	3,436	17	10,187	188	157,285
Totals	**10,480**	**$17,557,469**	**1,091**	**$1,081,148**	**355**	**$402,770**	**11,926**	**$19,041,387**

* *May include records with defective birth dates.*
\# *Includes survivor beneficiaries of deceased retirees.*

RETIREES AND BENEFICIARIES JUNE 30, 2016
TABULATED BY YEAR OF RETIREMENT

Year of Retirement	No.	Monthly Allowances Total	Monthly Allowances Average
1950 & before	2	$ 3,174	$1,587
1951-1955	1	3,454	3,454
1956-1960	3	1,272	424
1961-1965	8	3,457	432
1966-1970	34	14,934	439
1971-1975	121	70,781	585
1976-1980	351	256,220	730
1981-1985	722	744,863	1,032
1986-1990	836	932,815	1,116
1991-1995	1,362	1,726,885	1,268
1996-2000	1,554	2,324,782	1,496
2001-2005	2,009	3,811,905	1,897
2006-2010	2,156	4,084,401	1,894
2011	595	1,216,408	2,044
2012	789	1,493,025	1,892
2013	453	735,278	1,623
2014	405	667,952	1,649
2015	267	428,334	1,604
2016	258	521,447	2,021
Totals	**11,926**	**$19,041,387**	**$1,597**

SECTION D

METHODS AND ASSUMPTIONS

SUMMARY OF ASSUMPTIONS AND METHODS USED FOR ACTUARIAL VALUATIONS ADOPTED BY BOARD OF TRUSTEES

All assumptions are estimates of future experience except as noted. The rationale for the assumptions is based on experience studies where noted.

Economic Assumptions

The investment return rate used in making the valuation was 6.75% per year, compounded annually (net after investment and administrative expenses). This assumption is prescribed by the Eighth Amended Plan for the Adjustment of Debts of the City of Detroit (POA).

Price inflation is not directly used in the valuation. For purposes of assessing the reasonability of the investment return assumptions, we assumed price inflation of 2.25% per year.

Non-Economic Assumptions

The mortality table used to measure retired life mortality was 100% of the RP-2014 Blue Collar Annuitant Table for set-forward 1 year for males and 100% of the RP-2014 Blue Collar Annuitant Table set-forward 1 year for females. Tables were extended below age 50 with a cubic spline to the published Juvenile rates. Pre-retirement mortality is based on the corresponding Employee tables with corresponding set forward. The tables are projected to be fully generational, based on the 2-dimensional, sex distinct mortality improvement scale MP-2014 (which was published and intended to be used with RP-2014). 75% of all deaths-in-service are assumed to be non-duty related. This table was first used as of June 30, 2014. For disabled members, the same tables are used. The rationale for the mortality assumption is based on the 2008-2013 Mortality Experience Study issued February 4, 2015.

The probabilities of retirement for members eligible to retire are shown on pages 26 and 27. These probabilities were revised for the June 30, 2008 valuation. The rationale is based on the 2002-2007 Experience Study.

The probabilities of separation from service (including *death-in-service* and *disability*) are shown for sample ages on page 28. These probabilities were revised for the June 30, 2008 valuation. The rationale is based on the 2002-2007 Experience Study.

SUMMARY OF ASSUMPTIONS AND METHODS USED FOR ACTUARIAL VALUATIONS ADOPTED BY BOARD OF TRUSTEES (CONCLUDED)

Funding Methods

The unit credit cost method was used in determining age & service pension liabilities, vesting liabilities, and casualty pension liabilities. Under this method, there is no normal cost since benefits are frozen and there are no future accruals and actuarial accrued liability is the present value of each individual's accrued benefit.

Unfunded Actuarial Accrued Liabilities. Actual employer contributions through June 30, 2023 are set by the POA. The amortization period and method after 2023 has not yet been established by the Board.

Employer contribution dollars were assumed to be paid at the end of the employer fiscal year.

Present assets are set equal to the Market Value.

The data about persons now covered and about present assets were furnished by the System's administrative staff. Although examined for general reasonableness, the data was not audited by the Actuary.

SINGLE LIFE RETIREMENT VALUES

BASED ON RP-2014 BLUE COLLAR
100% OF MALE RATES SET-FORWARD 1 YEAR
100% OF FEMALE RATES SET-FORWARD 1 YEAR

Sample Attained Ages in 2016	Future Life Expectancy (years)	
	Men	Women
45	38.40	41.76
50	33.45	36.71
55	28.69	31.82
60	24.17	27.08
65	19.88	22.51
70	15.91	18.21
75	12.29	14.26
80	9.12	10.76

PROBABILITIES OF AGE/SERVICE RETIREMENT FOR MEMBERS ELIGIBLE TO RETIRE

Retirement Ages	**Percent of Eligible Active Members Retiring Within Next Year with Unreduced Benefits**		
	EMS	**D.O.T.**	**Others**
45	25%		
46	25%		
47	25%		
48	22%		
49	20%		
50	18%	55%	50%
51	15%	50%	50%
52	15%	50%	45%
53	15%	50%	45%
54	15%	55%	40%
55	15%	50%	30%
56	15%	50%	30%
57	15%	50%	30%
58	15%	50%	30%
59	15%	55%	40%
60	40%	40%	25%
61	30%	30%	25%
62	30%	30%	25%
63	30%	30%	25%
64	30%	30%	25%
65	30%	30%	35%
66	30%	30%	30%
67	30%	30%	25%
68	30%	50%	25%
69	30%	50%	25%
70	100%	100%	20%
71			20%
72			20%
73			20%
74			20%
75			20%
76			20%
77			20%
78			20%
79			20%
80			100%
Ref	537	1648	1647

Rationale for assumption is 2002 to 2007 Experience Study. Additional retirement rates for Component I (Hybrid Plan) eligibility are not reflected in this valuation due to materiality.

PROBABILITIES OF EARLY RETIREMENT FOR MEMBERS ELIGIBLE FOR EARLY RETIREMENT

Retirement Ages	Percent of Eligible Active Members Retiring Within Next Year with Reduced Benefits
55	7%
56	8%
57	9%
58	10%
59	12%
60	12%
61	12%
62	12%
63	12%
64	12%
Ref	1649

Rationale for assumption is 2002 to 2007 Experience Study.

SAMPLE RATES OF SEPARATION FROM ACTIVE EMPLOYMENT BEFORE RETIREMENT

Sample Ages	Years of Service	% of Active Members Separating Within Next Year			
		Withdrawal			
				Others	
		EMS	D.O.T.	Men	Women
ALL	0	11.00%	18.00%	18.00%	20.00%
	1	10.00%	16.00%	15.00%	16.00%
	2	8.00%	14.00%	13.00%	14.00%
	3	8.00%	11.00%	11.00%	12.00%
	4	7.00%	9.00%	10.00%	10.00%
25	5 & Over	6.70%	8.00%	7.60%	7.60%
30		5.90%	7.60%	7.22%	7.22%
35		5.20%	5.56%	5.28%	5.28%
40		4.40%	4.26%	4.05%	4.05%
45		3.40%	3.69%	3.51%	3.51%
50		2.40%	3.50%	3.33%	3.33%
55		2.00%	3.50%	3.33%	3.33%
60		0.00%	3.50%	3.33%	3.33%
Ref		338	143	584	188
		1068	212	212 x 0.95	212 x 0.95

Sample Ages	% of Active Members Becoming Disabled Within Next Year			
	D.O.T.		Others	
	Ordinary	Duty	Ordinary	Duty
25	0.02%	0.03%	0.01%	0.25%
30	0.05%	0.08%	0.04%	0.29%
35	0.14%	0.21%	0.11%	0.34%
40	0.27%	0.42%	0.21%	0.39%
45	0.51%	0.79%	0.40%	0.45%
50	0.66%	1.03%	0.51%	0.52%
55	0.76%	1.18%	0.59%	0.60%
60	0.86%	1.34%	0.67%	0.70%
Ref	23 x 0.45	23 x 0.70	23 x 0.35	423 x 0.90

Rationale for assumption is 2002 to 2007 Experience Study.

MISCELLANEOUS AND TECHNICAL ASSUMPTIONS

Benefit Service	Exact Fractional service is used to determine the amount of benefit payable.
Decrement Operation	Disability and mortality decrements do not operate during the first 5 years of service. Disability and withdrawal do not operate during retirement eligibility.
Decrement Timing	Decrements of all types are assumed to occur mid-year.
Eligibility Testing	Eligibility for benefits is determined based upon the age nearest birthday and rounded service on the date the decrement is assumed to occur.
Forfeitures	None.
Incidence of Contributions	Contributions are assumed to be received at the end of the year.
Marriage Assumption	100% of males and 100% of females are assumed to be married for purposes of death-in-service benefits. Male spouses are assumed to be three years older than female spouses for active member valuation purposes.
Normal Form of Benefit	Straight life is the normal form of benefit. Straight life is generally the most valuable under valuation assumptions. Actuarial equivalent factors are based on 7.5% interest and 1984 Group Annuity Mortality table.
Service Credit Accruals	Service accruals stop as of June 30, 2014 for measurement of Component II liabilities. However, future service in Component I may be used to satisfy benefit eligibility requirement in Component II. Members who became duty disabled prior to June 30, 2014 are assumed to get projected service from date of disability to conversion date. Member who become disabled after June 30, 2014 are assumed to get their frozen accrued benefit as of June 30, 2014 at date of conversion.
Administrative Expenses	The investment return assumption is mandated to be net of investment and administrative expense in the plan document. No other provision for administrative expenses is included in this valuation.
Sick Leave	As of June 30, 2014, this information was included in the 2014 AFC amounts.
AFC Adjustment	Reported 2014 AFC amounts were increased by 2.0% for active members due to data discrepancies related to the reported AFC. This adjustment was made based on discussions with System staff and the System's auditor and was checked for reasonableness for the 2016 valuation.
Member Contributions	Member contributions to this Component II plan are assumed to have ceased with the bankruptcy.

Rationale for assumption is 2002 to 2007 Experience Study, modified as necessary for changes in data or administration.

SECTION E

PLAN PROVISIONS

SUMMARY OF BENEFIT PROVISIONS EVALUATED

Component II Frozen Benefits

All Component II benefits are frozen as of June 30, 2014 based on service and average final compensation accrued as of that date and the provisions of the Detroit General Retirement System as it existed on June 30, 2014. Frozen benefits are further reduced by 4.5% and all future cost-of-living adjustments ("COLA's") were eliminated. Benefits resulting from the Annuity Savings Fund and benefits paid from the Annuity Reserve Fund were subject to a separate reduction described as a "Claw-back." Details of the claw-back provision are complicated and can be found in the Eighth Amended Plan of Adjustment. The benefits evaluated in this report are the frozen reduced benefits after adjusting the assets for the claw-back. Component II benefits are payable after separation from service, upon meeting the eligibility conditions of the plan as it existed on June 30, 2014, regardless of whether the individual is eligible to receive a Component I benefit at that time.

Our understanding of the June 30, 2014 plan provisions is provided below for completeness. The material below does not have legal standing and is not intended to cover all potential situations that could occur. If there are discrepancies between the description below and appropriate legal documents, the latter necessarily govern.

Age and Service Pension

Eligibility - Any age (minimum age 55 for non-EMS members hired after 1995) with 30 years of service (25 for EMS members), or age 60 with 10 years of service, or age 65 with 8 years of service.

Annual Amount - **EMS Members:** Sum of a) a basic pension of $12 for each of the first 10 years of service, plus b) a pension equal to 2.0% of AFC multiplied by years of service. Maximum benefit is 90% of AFC. **Other Members:** Sum of a) a basic pension of $12 for each of the first 10 years of service, plus b) a pension equal to the first 10 years of service multiplied by 1.6% of AFC, plus 1.8% of AFC for each year of service greater than 10 years up to 20 years, plus 2.0% of AFC for each year of service greater than 20 years up to 25 years, plus 2.2% of AFC for each year of service greater than 25 years. Future benefit accruals for certain active members (depending on bargaining unit) were reduced to 1.5% of final average compensation per year of service.

Type of Average Final Compensation (AFC) - Highest 3 consecutive years out of the last 10. Pension benefits will not be diminished if compensation is reduced because of a fiscal emergency. Effective July 1, 1999, in computing the AFC, a member shall have the option of adding the value of 25% of unused accrued sick leave to the earnings used in computing the AFC. Longevity is added to AFC in accordance with the following schedule: $150 after 5 years, $300 after 10 years, $450 after 15 years, $600 after 20 years, and $750 after 25 years.

Early Retirement

Eligibility - Any age with 25 or more years of service (min. age 55 for members hired after 1995).

Annual Amount - Same as regular retirement but actuarially reduced.

SUMMARY OF BENEFIT PROVISIONS EVALUATED (CONTINUED)

Deferred Retirement (Vested Benefit)

Eligibility - Hired prior to 7-1-80: Age 40 with 8 years of service. Hired on or after 7-1-80: Any age with 10 years of service.

Benefit Commencement - APTE hired prior to July 1, 1988: Benefit begins at the age the member would have become eligible for regular retirement if service had continued. ***SAAA, Non-Union and lawyers hired prior to June 30, 1986:*** Benefit begins at the age the member would have become eligible for regular retirement. ***Others:*** Benefits based on service rendered by June 30, 1986 begin at the age the member would have become eligible for regular retirement. Benefits based on service rendered after July 1, 1986 begin at age 62.

Annual Amount - Same as regular retirement but based on average final compensation and service at the time of termination.

Duty Disability Retirement

Eligibility - Service related disability before eligibility for service retirement prior to and July 1, 2014. No service requirement.

Annual Amount - An annuity which is the actuarial equivalent of the accumulated contributions at date of disability plus a pension of two-thirds of average final compensation at time of disability. The maximum annual pension is $5,700 ($9,000 for EMS). At the earliest of when the member would have accrued 30 years of service credit (25 for EMS) or age 60, the annuity is recomputed assuming contributions would have continued at a salary level equal to final compensation. The pension is recomputed with additional service credit granted from the date of disability to age 60 (or 30 years of service credit) or June 30, 2014, whichever is earlier.

Non-Duty Disability Retirement

Eligibility - Disability from any cause before age 60 with 10 or more years of service prior to July 1, 2014.

Annual Amount - Computed in the same manner as a regular retirement benefit. Maximum annual pension to age 60 is $6,000. Benefit is recomputed at age 60 with no maximum.

Duty Death Before Retirement

Eligibility - Death from service related causes. No age or service requirements.

Annual Amount - One-third of final compensation as of June 30, 2014 to the surviving spouse for life or until remarriage, plus an equal share of 1/4 of final compensation to each unmarried child under age 18. If there is no eligible spouse, eligible children each receive 1/4 of final compensation; if there are more than 2 such children, each child shares an equal part of 1/2 of final compensation. Maximum total amount for spouse and children is $9,000 annually. If there is no eligible spouse or children, dependent parents each receive 1/6 of deceased's final compensation, to a total maximum of $600 annually.

SUMMARY OF BENEFIT PROVISIONS EVALUATED (CONCLUDED)

Non-Duty Death Before Retirement

Eligibility - Death-in-service at any age with 15 years of service; or after age 60 with 10 years of service; or after age 65 with 8 years of service.

Annual Amount - To Surviving Spouse: Computed as a regular retirement benefit but reduced in accordance with a 100% joint and survivor election for members with 20 or more years of service. For members with 15 years of service but less than 20, benefit is reduced in accordance with a 50% joint and survivor election. To Dependent Children if no Surviving Spouse: $9,000 payable to age 19 of the youngest child or for life if child is physically or mentally impaired for members with 20 or more years of service ($6,000 if less than 20 years of service).

Post-Retirement Cost-of-Living Adjustments

Benefit is increased annually by 2.25% of the **original** pension amount at retirement. Post-retirement cost-of-living increases were eliminated on future accruals for certain active members (depending on bargaining unit).

Member Contributions

Members have the option of choosing one of four contribution amounts: (1) 0%; (2) 3.0% of compensation up to the Social Security wage base, plus 5.0% of compensation in excess of the Social Security wage base; (3) 5.0% of total compensation; or (4) 7.0% of total compensation. Member contributions can be paid as a lump sum or annuitized at retirement to provide an annuity in addition to the pension (which is not affected by the level of member contributions).

SECTION F

GLOSSARY

GLOSSARY

Actuarial Accrued Liability. The difference between (i) the actuarial present value of future plan benefits, and (ii) the actuarial present value of future normal cost. Sometimes referred to as "accrued liability" or "past service liability."

Accrued Service. The service credited under the plan which was rendered before the date of the actuarial valuation.

Actuarial Assumptions. Estimates of future plan experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Decrement assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.

Actuarial Cost Method. A mathematical budgeting procedure for allocating the dollar amount of the "actuarial present value of future plan benefits" between the actuarial present value of future normal cost and the actuarial accrued liability. Sometimes referred to as the "actuarial funding method."

Actuarial Equivalent. A single amount or series of amounts of equal value to another single amount or series of amounts, computed on the basis of the rate(s) of interest and mortality tables used by the plan.

Actuarial Present Value. The amount of funds presently required to provide a payment or series of payments in the future. It is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

AFC. Average Final Compensation.

Amortization. Paying off an interest-bearing liability by means of periodic payments of interest and principal, as opposed to paying it off with a lump sum payment.

APTE. Association of Professional and Technical Employees.

GLOSSARY

Contribution Budgeting Liability. An expected return based measure of pension obligation.

DIA. Detroit Institute of Art.

D.O.T. Department of Transportation.

DWSD. Detroit Water and Sewerage Department.

EMS. Emergency Medical Service.

Experience Gain (Loss). A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions during the period between two actuarial valuation dates, in accordance with the actuarial cost method being used.

GASB. The Governmental Accounting Standards Board.

GLWA. Great Lakes Water Authority.

Normal Cost. The annual cost assigned, under the actuarial funding method, to current and subsequent plan years. Sometimes referred to as "current service cost." Any payment toward the unfunded actuarial accrued liability is not part of the normal cost.

POA. The 8^{th} Amended Plan for the Adjustment of the Debt of the City of Detroit.

Reserve Account. An account used to indicate that funds have been set aside for a specific purpose and are not generally available for other uses.

SAAA. Senior Accountants, Analysts, and Appraisers Association.

Solvency Liability. A market-based measure of the present value of accrued benefits at a municipal bond discount rate unadjusted for the credit quality of the plan sponsor.

Unfunded Actuarial Accrued Liability. The difference between the actuarial accrued liability and valuation assets. Sometimes referred to as "unfunded accrued liability."

UTGO. Unlimited Tax General Obligation.

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