

**City of Detroit Police and Fire  
Retiree Health Care Trust  
Actuarial Valuation Report  
as of December 31, 2018**



November 12, 2019

VEBA Board of Trustees  
City of Detroit Police and Fire  
Retiree Health Care Trust

**Re: VEBA Valuation/Benefit Modeling as of December 31, 2018**

Dear Trustees:

Gabriel, Roeder, Smith & Company (“GRS”) has performed an actuarial valuation of the City of Detroit Police and Fire Retiree Health Care Trust as of December 31, 2018. The purpose of this actuarial valuation is to evaluate the financial status of the program as of December 31, 2018 and model the estimated solvency under benefit levels set by the Board for calendar years 2018 and 2019.

This report is structured as follows:

- Background and Plan Structure
- Participant Data and Description of Benefits Currently Provided
- Valuation Results and Baseline Projections
- Plan Assets
- Assumptions
- Sensitivity Testing

A summary of the actuarial methods and assumptions utilized in the actuarial calculations are included in Section E.

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

The valuation results set forth in this report are based upon data and information, furnished by the Trust (or their designees), concerning Plan benefits, financial transactions, and beneficiaries of the VEBA. We reviewed this information for internal and year-to-year consistency, but did not audit the data. We are not responsible for the accuracy or completeness of the information provided by the VEBA.

The valuation results summarized in this report involve actuarial calculations that require assumptions about future events. The mortality rate assumptions were chosen to be consistent with the rates of mortality used by the City of Detroit Police and Fire Retirement System. The assumed rate of investment return was selected to be 4% per annum for consistency with the yield that is provided from the bond received through the City of Detroit's Bankruptcy. Since the Board has the ability to monetize the bond and invest the proceeds, the long-term rate of return may be different than the bond yield. However, since the Board has only monetized a small portion of the Bond and the current assets (other than the Bond) are primarily in short term investments/cash equivalents and represent less than 10% of the remaining face value of the Bond, we believe using the existing bond's current yield is the most reasonable approach for setting the expected rate of investment return.

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; and changes in Plan provisions or applicable law. We have performed an analysis of the sensitivity of certain changes in assumptions in this report.

We believe that the actuarial methods used in this report are reasonable and appropriate for the purpose for which they have been used. In addition, because it is not possible or practical to consider every possible contingency, we may use summary information, estimates or simplifications of calculations to facilitate the modeling of future events. We may also exclude factors or data that are deemed to be immaterial.

This report is not a recommendation to anyone to participate in the VEBA. GRS makes no representations or warranties to any person participating in or considering participation in the program.

This program is similar to a defined contribution plan. Benefits can be paid from this plan to the extent that the plan continues to be solvent. While the modeling in this report is intended to estimate how long the benefits can be paid (given a specific level of benefits), there are no guarantees that future events will unfold as modeled. We understand that the Board's intent is to annually model solvency and adjust benefits as they deem necessary.

To the best of our knowledge, the information contained in this report is accurate and fairly presents the actuarial position of the City of Detroit Police and Fire Retiree Health Care Trust as of December 31, 2018. No adjustments were made for activity occurring after December 31, 2018 in the measurement of the liabilities. The estimate of the solvency was adjusted to account for the monetization of \$20 million (face value) of bonds occurring after the valuation date.

VEBA Board of Trustees  
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This report is not intended to establish rates of future contributions to the Trust. It is our understanding that the amount of all future Trust contributions has been established and that the Board will set benefit levels annually until such time as the Trust is depleted or until all participants have died, whichever comes first.

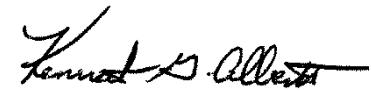
Abra D. Hill is a Member of the American Academy of Actuaries (MAAA) and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

This report is based on the benefit levels approved by the Board at the September 30, 2019 meeting. Modeling of alternate benefit levels, therefore, have not been included in this report.

The signing individuals are independent of the plan sponsor.

This report replaces our draft report, dated September 27, 2019 and includes the 2020 benefit levels set at the September 2019 Board meeting.

Respectfully submitted,



Kenneth G. Alberts



Abra D. Hill, ASA, MAAA

KGA/ADH:bd

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## **SECTION A**

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### **BACKGROUND AND PLAN STRUCTURE**

## Background and Plan Structure

The VEBA Trust was created during the Bankruptcy of the City of Detroit. It was funded with B-notes from the City of Detroit as well as (pre-established) contributions from the Foundations through 2034. The VEBA Board of Trustees is charged with determining the benefits that can be paid from the Trust. Benefits are payable to the participants only to the extent the Trust still has assets to fund the benefits. At the inception of the plan, the benefits were initially set at 1) \$120 per month toward the premiums for a Medicare Advantage plan from Blue Cross Blue Shield or HAP or 2) an HRA monthly benefit ranging from \$120 per month to \$395 per month depending on age, retirement type (normal or disabled) and Medicare eligibility. Through a competitive bid process, the Trust has been able to manage the cost of the Medicare Advantage premiums and have adjusted benefits accordingly. The Trust paid benefit levels for 2019 and 2020, as adopted by the Board, are shown on page B-1.

The plan operates much like a group defined contribution plan in pay status. The participants of the plan are a closed group and all retired. As of December 31, 2018, there were 9,482 eligible participants. Of those, 8,333 have opted to actively participate. Of the 8,333 participants actively participating, 4,709 participants are receiving coverage under a Medicare Advantage plan and 3,624 are covered by the HRA benefit. During 2018, approximately 40% of the potential HRA payments that could have been made were utilized. The eligible (potential) and current (actually participating) participants are shown in greater detail on page B-1.

### Liability of the Plan

Since benefits are limited to the available assets, the true liabilities of the plan are equal to the value of the assets and the plan is always 100% funded. For purposes of this report, however, we have computed a theoretical liability based on the benefit targets established by the Board. In that context, an unfunded liability indicates that benefits will likely need to be lowered below the Board's established benefit targets unless experience is more favorable than assumed (generating experience gains). It is important to note that in determining the unfunded liability, we have used the estimated market value of the Bonds assuming immediate and complete monetization at different monetization rates (percentages of face value). A deficit indicates that benefits will likely need to be lowered below the Board's established benefit targets unless experience is more favorable than assumed (generating experience gains). We have used the estimated market value of the Bonds assuming immediate and complete monetization at different monetization rates (percentages of face value).

### Sensitivity Testing and Preliminary Results

We presented the preliminary results to the Board at the September 2019 Board meeting based on the 2019 benefit levels. We then used our interactive modeling software to test alternative benefit levels for 2020 and beyond as well as the sensitivity to certain assumptions. The results of those sensitivity tests are shown in section F. At that time, the Board adopted a change in benefit levels, effective January 1, 2020. The new benefit levels essentially set a floor of \$120 per participant. For those members whose Medicare Advantage premiums were less than \$120 per month, the difference will be made available through an HRA reimbursement account.

## **SECTION B**

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### **PARTICIPANT DATA AND PLAN DESCRIPTION**

## Retired Member Summary as of December 31, 2018

Benefit Type	Monthly Benefit Paid by the Trust for Calendar Year		Age Range			Total Lives
	2019	2020	Under 26	Pre 65	Post 65	
<b>Medicare Advantage PPO</b>						
Single	\$ 88.65	\$ 120.00	-	60	4,515	4,575
<b>Medicare Advantage HMO</b>						
Single	\$ 90.00	\$ 120.00	-	6	128	134
<b>Total MA Participants<sup>#</sup></b>			-	66	4,643	4,709
<b>Opt-Out of MA</b>	\$ 85.00	\$ 120.00	-	28	1,194	1,222
<b>Retiree HRA</b>						
Below FPL in a Non Medicaid Exp State	\$ 145.58	\$ 145.58	-	-	-	-
Income Level and Purchased on State Exchange	\$ 170.00	\$ 170.00	-	31	488	519
Non Medicare Eligible Duty Disabled Police and Fire	\$ 395.00	\$ 395.00	1	322	6	329
Non Medicare Eligible Stipend	\$ 120.00	\$ 120.00	3	941	16	960
Over Age 65 Non Medicare Eligible	\$ 295.00	\$ 295.00	-	-	39	39
Over Age 65 Unsub	\$ 85.00	\$ 120.00	-	-	-	-
<b>Spouse HRA</b>						
Non Medicare Eligible Spouse	\$ 120.00	\$ 120.00	-	537	18	555
<b>Total HRA Members (No Opt-Out)</b>			4	1,831	567	2,402
<b>Total Current Participants</b>			4	1,925	6,404	8,333

<b>Total Potential Participants</b>						
Spouse Not Receiving	\$ -	\$ -	-	34	709	743
Employees Waiving, no MA, no HRA	\$ -	\$ -	-	102	304	406
Participants - No Enrollment Election	\$ -	\$ -	-	-	-	-
May Be Added	\$ -	\$ -	-	-	-	-
Special Open Enrollment	\$ -	\$ -	-	-	-	-
<b>Total Potential Participants</b>			-	136	1,013	1,149

# If premiums are less than \$120, the difference between the \$120 and the premium will be available through a health reimbursement account (HRA).

Amounts shown are net of amounts paid by the Trust (after reflecting amounts charged to participants).

Participants under age 65 will be eligible for the MA premium (up to \$120 in 2020) or the Opt-Out HRA (\$120 in 2020) upon reaching age 65.

## Retired Member Age Summary as of December 31, 2018

Age	MA PPO	MA HMO	Opt-Out HRA	Retiree HRA							Spouse HRA (Non-Med Elig)
				Below FPL	Income Level	Non-Med Duty Dis	Non-Med Elig	Over 65 Non-Med Elig	Over 65 Unsub		
Under 30	-	-	-	-	-	1	3	-	-	-	1
30 - 34	-	-	-	-	-	-	-	-	-	-	2
35 - 39	-	-	-	-	-	29	6	-	-	-	7
40 - 44	2	-	-	-	-	44	15	-	-	-	21
45 - 49	3	-	2	-	-	80	32	-	-	-	55
50 - 54	6	1	3	-	4	73	173	-	-	-	92
55 - 59	8	1	23	-	8	48	272	-	-	-	130
60 - 64	42	4	689	-	19	47	443	-	-	-	229
65 - 69	603	42	266	-	220	7	11	18	-	-	10
70 - 74	1,485	38	106	-	138	-	3	9	-	-	2
75 - 79	1,036	25	49	-	79	-	1	7	-	-	3
80 - 84	536	11	37	-	28	-	-	1	-	-	2
85 - 89	456	4	35	-	15	-	1	2	-	-	1
90 - 94	322	5	9	-	7	-	-	1	-	-	-
95 and Over	76	3	3	-	1	-	-	1	-	-	-
<b>TOTAL</b>	<b>4,575</b>	<b>134</b>	<b>1,222</b>	<b>-</b>	<b>519</b>	<b>329</b>	<b>960</b>	<b>39</b>	<b>-</b>	<b>555</b>	

## **SECTION C**

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### **VALUATION RESULTS AND BASELINE BENEFIT MODEL**

## Summary of Results

### Principal Valuation Results

<b>Valuation Date:</b>	<b>December 31, 2018</b>	
<b>A) Assets</b>		
1) Face Value of Bonds at Valuation Date	\$ 233,900,999	\$ 233,900,999
2) Monetization Percentage	55%	80%
3) Estimated Bond Market Value	\$ 128,645,549	\$ 187,120,799
4) Net additional assets	19,524,337	\$ 19,524,337
5) Estimated Market Value of Assets	\$ 148,169,886	\$ 206,645,136
<b>B) Present Value of Future Contributions</b>	\$ 519,884	\$ 519,884
<b>C) Present Value of Future</b>		
1) Benefits	\$ 122,028,066	\$ 122,028,066
2) Expenses	21,445,989	21,445,989
3) Total Liability	\$ 143,474,055	\$ 143,474,055
<b>D) Asset Surplus/(Deficit) [A.5+B-C.3]</b>	\$ 5,215,715	\$ 63,690,965
<b>E) Funded Ratio [(A.5+B)/C.3]</b>	103.6%	144.4%

# Discussion

## Actuarial Valuation

Gabriel, Roeder, Smith & Company (“GRS”) has performed an actuarial valuation of the City of Detroit Police and Fire Retiree Health Care Trust as of December 31, 2018.

The primary purposes of the actuarial valuation are to:

- Compare the actuarial present value of the obligations for retiree health care as of December 31, 2018, with the value of the assets associated with the Program as of that same date; and
- Compare the actuarial present value of the obligations for retiree health care as of December 31, 2018, with the value of the assets associated with the Program as of that same date under certain alternate assumptions to show sensitivity to those assumptions.

In addition, the report provides summaries of the member data, financial data, plan provisions valued, and actuarial assumptions and methods.

## Financial Status of Plan

The Board determined the line of credit was no longer needed to meet annual benefit payments. We have, therefore, removed the line of credit (and the cost for it) from our modelling and calculations. As of December 31, 2018, the present value of all future obligations (PVFO) at that date is \$143.5 million. Plan assets as of December 31, 2018, based on a 55% monetization of Trust assets, are \$148.7 million (including the present value of future contributions).

The difference between the market value of assets of \$148.7 million and PVFO of \$143.5 million represents a Plan asset of \$5.2 million. The Plan is 103.6% funded after consideration of \$519,884 (present value) in future scheduled contributions. This implies that the Trust will still have money after the last participant dies, based on the following conditions:

- Experience is similar or more favorable than assumed; and
- Bonds are monetized at or above a 55% level or held to maturity.

Based on an 80% monetization, the fund is 144.4% funded. In January 2018 and March 2019, the fund monetized \$20 million in bonds (at each date) at above 80%, suggesting this measure may be more reflective of the current market. Page D-1 shows the historical monetization.

The funded status may not be appropriate for determining the settlement cost of the Plan. The funded status is appropriate for determining the need for future contributions. However, since there are no future contributions other than those already accounted for in the valuation assets, the funded status is appropriate for determining the long-term solvency of the Plan.

The estimated financial status of the plan improved from the 2017 valuation for the following reasons:

- 1) HRA utilization was approximately 41% compared to an assumed utilization of 50%.
- 2) Substantially different census data.

## Discussion (Continued)

### Plan Status

We believe the assumptions currently in use for this valuation are reasonable as adopted by the Board.

The Plan benefits are not vested and may be reduced in the future. The Board is expected to decide annually on the level of benefits that will be paid each year. Future valuations will take into consideration these decisions as they occur.

### Participation

The Board opened participation up to a group of “otherwise eligible” members (spouses not receiving). As of December 31, 2016, there were 1,241 potential participants from this group. Approximately 43% of the group elected to participate during 2017. As of December 31, 2017, 705 potential participants remain in this group. The “spouses not receiving” were not definitively identifiable in the December 31, 2018 valuation data. However, any records with spouses were assumed to be part of that group and we have estimated that this group has 743 participants as of December 31, 2018. Future obligations for the potential participants have not been included in the valuation. If they were included, liabilities would increase between \$6.1 million and \$12.1 million, using a 50% and 100% utilization assumption, respectively.

Members who are under age 65 and receiving an HRA payment were assumed to elect a Medicare Advantage plan upon attaining age 65.

Please see Section F to see how changes in assumptions (sensitivity) affect the funded status and solvency.

### Projection with Alternate HRA Utilization Assumption

This is the estimated employer benefit payments from 2019-2029 using a 40% HRA utilization assumptions with no potential future spouses. Expenses are not included.

2019	\$8,680,535
2020	10,227,039
2021	9,942,052
2022	9,637,226
2023	9,322,359
2024	8,992,675
2025	8,663,447
2026	8,315,412
2027	7,958,159
2028	7,610,742
2029	7,262,098

The pattern of benefits is materially different than the projection from the last valuation. This is due to substantial differences in the census data provided for the valuation.

## Discussion (Continued)

### Utilization

Experience during 2018 shows that members electing HRA benefits are utilizing approximately 40% of their annual benefits, on average. However, the Plan has not had enough experience to rely solely on Plan experience to set a utilization assumption. After much discussion, the Board adopted the following utilization assumptions:

Utilization Assumption		
Current Benefit	Future Medicare Eligible	
	Benefit Group	
100%	100%	Medicare Advantage PPO
100%	100%	Medicare Advantage HMO
50%	100%	Opt-Out of MA
50%	100%	Below FPL in a Non Medicaid Exp. State
50%	100%	Income Level and Purchased on State Exchange
50%	100%	Non Medicare Eligible Duty Disabled Police and Fire
50%	100%	Non Medicare Eligible Stipend
50%	100%	Over Age 65 Non Medicare Eligible
50%	100%	Non Medicare Eligible Spouse
0%	0%	Spouse Not Receiving
0%	0%	Actively Waiving
0%	0%	No Enrollment Elected

### HRA Utilization History

Utilization					
100% of Expected HRA	Estimated HRA Expense	Census	HRA Count	Utilization	
\$ 6,217,500	\$ 2,558,583	12/30/2018	3,631	41%	
\$ 6,341,040	\$ 2,586,264	12/31/2017	3,915	41%	
\$ 6,571,387	\$ 2,454,997	12/31/2016	3,424	37%	

Utilization prior to 2016 is excluded due to unavailable information.

## Discussion (Concluded)

### Expenses

Effective with the 12/31/2017 valuation, we assumed expenses would end once the projected population fell below ½% of the remaining population.

### Recommendation

At the September 2019 Board meeting, we recommended the Board consider increasing benefits to current participants to avoid having money in the Trust after the last death. The Board acted on this recommendation at that meeting and adopted new benefit levels for 2020.

# Solvency Projection Assumptions

## Baseline

### Solvency Projection Assumptions

\$253,900,999	Original Face Value of Bond
\$233,900,999	Face Value of Bond as of Valuation Date
\$19,524,337	Investable Assets
4.00%	Bond Coupon per Annum to 2035 (as % of Face Value)
6.00%	Bond Coupon per Annum at 2035 (as % of Face Value)
\$1,095,000	Expected First Year Administrative Expenses
3.00%	Expected Growth Rate for All Expenses
	Administrative expenses are pro-rated based on remaining population.
	Expenses are assumed to be \$0 when the remaining population reaches 0.5%.

The solvency scenario's are based on the following:

- 1) The 2019 benefit payments are based on the 2018 benefit levels set by the Board. The 2020 and beyond benefit payments are based on the 2020 benefit levels set by the Board.
- 2) No future increases in benefit levels were assumed.
- 3) Members not currently participating were assumed NOT to participate in the future.
- 4) Members over age 65 and currently receiving benefits were assumed to continue to receive the benefit indicated on the data file for life (or until insolvency).
- 5) Members under age 65 were assumed to select the PPO Medicare Advantage plan upon reaching age 65.

# City of Detroit Police and Fire Retiree Health Care Trust

## Baseline

MA PPO	MA HMO	Opt-Out HRA	Current Participants								Potential Future Participants				Group Description	
			Below FPL	Income Level	Non-Med Duty Dis	Non-Med Elig	Over 65 Non-Med Elig	Over 65 Unsub	Spouse HRA (Non-Med Elig)	Spouse Not Receiving	Actively Waived	No Enrollment Election				
4,747	\$ 90.00	\$ 85.00	\$ 145.58	\$ 170.00	\$ 395.00	\$ 120.00	\$ 295.00	\$ 85.00	\$ 120.00	n/a	n/a	n/a	n/a	Current Monthly Amount		
4,709	136	1,957	-	43	370	1,091	134	1	319	705	54	1,033	Number in Group 12/31/2017			
	134	1,222	519		336	960	39	-	555	743	-	406	Number in Group 12/31/2018			
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Include Group			
\$ -	\$ 120.00	\$ 120.00	\$ 120.00	\$ 170.00	\$ 395.00	\$ 120.00	\$ 295.00	\$ 120.00	\$ 120.00				Flat Dollar Monthly Lifetime Benefit (per person) Pre-65			
\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 295.00	\$ 120.00	\$ 120.00				Flat Dollar Monthly Lifetime Benefit (per person) Post-65			
100%	100%	100%	50%	50%	50%	50%	50%	50%	50%				Utilization Percentage Pre-65 (Applies to Flat Dollar Only)			
100%	100%	100%	100%	100%	100%	100%	100%	100%	100%				Utilization Percentage Post-65 (Applies to Flat Dollar Only)			
0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0% Annual increase in Flat Dollar Benefit			
\$253,900,999 Original Face Value of Bonds at 12/10/2014			122,028,066 Present Value of Benefits													
\$228,245,662 Face Value of Bond (A) at Val Date			21,445,989 Present Value of Expenses													
\$5,655,337 Face Value of Bond (B) at Val Date			143,474,055 Total													
55% MV of Bond (used to calculate UAAL)			148,169,886 Valuation Assets (Immediate Monetization)^													
\$19,524,337 Investable Assets*			(4,695,831) Unfunded Actuarial Liability (UAL)													
Never Year of Insolvency			519,884 Present Value of Future Contributions													
Never Year Monetization/Cash is Needed			(5,215,715) Asset Deficit/(Surplus)													
4.00% Average Yield			103.6% Funded %													
Ad-Hoc																
Year	Ad-Hoc Prem. Increase	Investment Return	Optional Bond Sale	Optional % Of Face	Face Value of Bonds BoY	Principal Repayment	Jan 1. Assets*	Benefit Payments	Grant / (Due City)	Bond Coupon	Invested Assets	Ben./ Expen./ Grant/Bond#	Interest Total	Dec. 31 Assets	% Contracts Remaining	
2019	N/A	4.00%	\$ 20,000,000	86.50%	\$213,900,999	\$ -	\$ 36,824,337	\$ (8,680,535)	\$ (800,000)	\$ 43,750	\$ 8,956,040	\$ 1,472,973	\$ (188,736)	\$ 10,240,278	\$ 37,627,830	97%
2020	0.00%	4.00%	-	-	213,900,999	-	37,627,830	(10,656,871)	(796,598)	43,750	8,556,040	1,505,113	(228,194)	9,832,959	36,051,070	93%
2021	0.00%	4.00%	-	-	213,900,999	-	36,051,070	(10,340,456)	(805,963)	43,750	8,556,040	1,442,043	(222,053)	9,776,029	34,724,430	90%
2022	0.00%	4.00%	-	-	213,900,999	-	34,724,430	(10,007,195)	(815,128)	43,750	8,556,040	1,388,977	(215,571)	9,729,446	33,675,303	86%
2023	0.00%	4.00%	-	-	213,900,999	-	33,675,303	(9,668,923)	(824,099)	43,750	8,556,040	1,347,012	(208,985)	9,694,067	32,920,098	83%
2024	0.00%	4.00%	-	-	213,900,999	-	32,920,098	(9,314,840)	(832,876)	43,750	8,556,040	1,316,804	(202,079)	9,670,765	32,486,897	80%
2025	0.00%	4.00%	-	-	212,717,743	1,183,256	33,670,153	(8,963,382)	(841,452)	43,750	8,508,710	1,346,806	(195,222)	9,660,294	33,569,362	76%
2026	0.00%	4.00%	-	-	211,610,104	1,107,640	34,677,002	(8,593,739)	(849,821)	43,750	8,464,404	1,387,080	(187,996)	9,663,488	34,940,679	73%
2027	0.00%	4.00%	-	-	210,565,676	1,044,428	35,985,107	(8,216,840)	(857,972)	43,750	8,422,627	1,439,404	(180,621)	9,681,410	36,635,455	69%
2028	0.00%	4.00%	-	-	209,595,064	970,611	37,606,066	(7,850,298)	(865,897)	43,750	8,383,803	1,504,243	(173,449)	9,714,596	38,648,217	66%
2029	0.00%	4.00%	-	-	208,707,775	887,289	39,535,506	(7,479,817)	(873,584)	43,750	8,348,311	1,581,420	(166,193)	9,763,538	40,989,393	63%
2030	0.00%	4.00%	-	-	207,914,480	793,295	41,782,688	(7,107,299)	(881,041)	43,750	8,316,579	1,671,308	(158,892)	9,828,995	43,667,092	59%
2031	0.00%	4.00%	-	-	196,198,013	11,716,467	55,383,559	(6,732,321)	(888,278)	43,750	7,847,921	2,215,342	(151,537)	9,911,726	57,718,436	56%
2032	0.00%	4.00%	-	-	183,955,253	12,242,760	69,961,197	(6,360,337)	(895,315)	43,750	7,358,210	2,798,448	(144,238)	10,012,420	72,761,714	52%
2033	0.00%	4.00%	-	-	171,222,144	12,733,109	85,494,823	(5,970,579)	(902,192)	43,750	6,848,886	3,419,793	(136,580)	10,132,098	88,797,900	49%
2038	0.00%	4.00%	-	-	93,393,893	15,565,650	192,904,972	(4,085,432)	(936,727)	-	5,603,634	7,716,199	(100,443)	13,219,389	201,102,202	34%
2043	0.00%	4.00%	-	-	15,565,643	15,565,650	315,267,571	(2,540,711)	(982,307)	-	933,939	12,610,703	(70,460)	13,474,181	325,218,733	21%
2048	0.00%	4.00%	-	-	-	-	385,809,140	(1,449,648)	(1,055,092)	-	-	15,432,366	(50,095)	15,382,271	398,686,670	12%
2053	0.00%	4.00%	-	-	-	-	456,896,911	(788,904)	(1,163,535)	-	-	18,275,876	(39,049)	18,236,828	473,181,300	6%
2058	0.00%	4.00%	-	-	-	-	545,716,390	(404,031)	(1,308,763)	-	-	21,828,656	(34,256)	21,794,400	565,797,997	3%
2063	0.00%	4.00%	-	-	-	-	654,627,245	(189,189)	(1,491,350)	-	-	26,185,090	(33,611)	26,151,479	679,098,185	2%
2068	0.00%	4.00%	-	-	-	-	786,985,161	(78,420)	(1,713,429)	-	-	31,479,406	(35,837)	31,443,569	816,636,881	1%

## **SECTION D**

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### **ASSET INFORMATION**

## Bond Information

The municipal bond backing the retiree medical benefits had an initial par value of \$253,900,999 at 12/10/2014. The Trust holds a bond with a face value of \$233,900,999 as of the valuation date. This bond pays a coupon of 4% per annum, two times per year and 6% per annum for years 2035-2044. Principal is repaid in 20 equal annual installments beginning April 2025.

The mandatory repayment schedule was adjusted in 2018. Please see page D-5 for information on the revised redemption requirements.

Contributions of \$43,750 will also continue to be made annually until 2034 under an agreement with the Foundation for Detroit's Future.

## Reported Bond Sales

Date	Bonds Sold	Percent of Face Value
01/24/2018	\$20,000,000	81.05875%
05/31/2019	\$20,000,000	86.50000%

## Reported Revenues and Expenditures

**2018**

**Revenue:**

Health Insurance Prem-AETNA	\$ 1,646,338
Health Insurance Premium-Priority	45,360
Dental Premiums	2,641,350
Vision Premiums	642,079
Interest Income	9,829,689
Realized Gain(Loss) on Inv	(1,661,393)
Unrealized Gain(Loss) on Inv	14,118,158
 Total Fund Revenue	 \$ 27,261,581

**Claim Expenses:**

Health Insurance Exp - AETNA	6,672,063
Health Insurance Exp - Priority	193,731
Health Insurance Exp - BCBS	(662,444)
Dental Expense	2,558,583
Vision Expense	641,358
HRA Claims Expense	2,589,322
 Total Claims Expense	 \$ 11,992,613

**Administrative Expenses:**

Administration Fees	402,278
Audit, Accounting Fees	15,700
Bank Fees	37,947
Dues & Subscriptions	-
Interest Expense	4,172
Investment Manager Fees	5,010
Legal Fees	85,613
Liability insurance Prem Exp	49,119
Misc Expense (including Telephone/Mailing/Meeting/Postage)	2,892
Office Supplies	39,134
Other Professional Fees	112,396
Printing Expense	2,809
Trustee Expense	2,730
Trustee Lost Wages	18,675
Trustee Stipends	23,600
 Total Administrative Expense	 802,075
 Total Expense	 \$ 12,794,688
 Net Surplus or Deficit	 \$ 14,466,893

# Reported Plan Assets (at Market Value)

**12/31/2018**

## Balance Sheet

### ASSETS

#### Current Assets:

Expense Account HNB #1745	\$ 347,381
Benefit Account HNB #1723	\$ 195
Total Current Assets	\$ 347,576

#### Investments:

Fifth-Third Trust (Detroit Bonds)	\$ 202,748,249
Fifth-Third Cash & Equivalents	\$ 4,662,070
Morgan Stanley #0113	\$ 4,756,245
Morgan Stanley #1113	\$ 10,078,521
Investment at Cost	\$ 222,245,085
Investment Market Value	\$ 222,245,085

#### Other Assets:

Accrued Interest Receivable	\$ 2,339,010
Accounts Receivable	\$ (10,627)
Prepaid Expenses	\$ -
Deposits	\$ (1,569)
Misc Clearing	\$ 617
Total Other Assets	\$ 2,327,431

Total Assets

\$ 224,920,092

### LIABILITIES

#### Current Liabilities:

Accounts Payable	\$ 319,892
Advance Contributions	\$ 183
Misc. Clearing	\$ -
Total Current Liabilities	\$ 320,075

Total Liabilities

\$ 320,075

Fund Balance

\$ 210,133,124

Net Fund Increase (Decrease)

\$ 14,466,893

Net Fund Balance

\$ 224,600,017

Total Liab & Fund Balance

\$ 224,920,092

## Development of 12/31/2018 Investable Assets (at Market Value)

The beginning of year amount of investable assets was not clear. For projection purposes, the 1/1/2019 assets are estimated to be as follows:

\$ 347,576	HNB Accounts
4,662,070	Fifth Third Cash & Equivalents
14,834,766	Morgan Stanley Investments
(320,075)	Liabilities
<u>\$ 19,524,337</u>	1/1/2019 Investable Assets

Accrued interest receivable is excluded because it is accounted for in the future cash flow projection.

## Expense History

Date	Total Expenses
2016	\$ 1,281,137
2017	\$ 1,095,132
2018	\$ 802,075

## Revised Mandatory Bond Redemption Schedule

Mandatory Redemption Date (Apr 1)	Series 2014(A)			12/31/2018	
	Redemption Requirements		Remaining/ Outstanding		
	Outstanding Prior to Tender/Purchase	Reduced	Remaining Face BOY	PF Mandatory Monetization	
2025	\$30,828,003	\$28,416,937	\$2,411,066	\$424,332,593	\$1,296,896
2026	30,828,003	28,571,017	2,256,986	421,921,527	1,214,018
2027	30,828,003	28,699,820	2,128,183	419,664,541	1,144,735
2028	30,828,003	28,850,233	1,977,770	417,536,358	1,063,829
2029	30,828,003	29,020,015	1,807,988	415,558,588	972,505
2030	30,828,003	29,211,542	1,616,461	413,750,600	869,484
2031	30,828,003	6,953,898	23,874,105	412,134,139	12,841,721
2032	30,828,003	6,732,253	24,095,750	388,260,034	12,960,943
2033	30,828,003	5,771,739	25,056,264	364,164,284	13,477,597
2034	30,828,003		30,828,003	339,108,020	16,582,177
2035	30,828,003		30,828,003	308,280,017	16,582,177
2036	30,828,003		30,828,003	277,452,014	16,582,177
2037	30,828,003		30,828,003	246,624,011	16,582,177
2038	30,828,003		30,828,003	215,796,008	16,582,177
2039	30,828,003		30,828,003	184,968,005	16,582,177
2040	30,828,003		30,828,003	154,140,002	16,582,177
2041	30,828,003		30,828,003	123,311,999	16,582,177
2042	30,828,003		30,828,003	92,483,996	16,582,177
2043	30,828,003		30,828,003	61,655,993	16,582,177
2044 *	30,827,990		30,827,990	30,827,990	16,582,164

Mandatory Redemption Date (Apr 1)	Series 2014(B)			12/31/2018	
	Redemption Requirements		Remaining/ Outstanding		
	Outstanding Prior to Tender/Purchase	Reduced	Remaining Face BOY	PF Mandatory Monetization	
2025	\$770,205	\$770,205	\$0	\$9,979,196	\$0
2026	770,205	770,205	0	9,979,196	0
2027	770,205	770,205	0	9,979,196	0
2028	770,205	770,205	0	9,979,196	0
2029	770,205	770,205	0	9,979,196	0
2030	770,205	770,205	0	9,979,196	0
2031	770,205	770,205	0	9,979,196	0
2032	770,205	33,467	736,738	9,979,196	417,519
2033	770,205		770,205	9,242,458	436,485
2034	770,205		770,205	8,472,253	436,485
2035	770,205		770,205	7,702,048	436,485
2036	770,205		770,205	6,931,843	436,485
2037	770,205		770,205	6,161,638	436,485
2038	770,205		770,205	5,391,433	436,485
2039	770,205		770,205	4,621,228	436,485
2040	770,205		770,205	3,851,023	436,485
2041	770,205		770,205	3,080,818	436,485
2042	770,205		770,205	2,310,613	436,485
2043	770,205		770,205	1,540,408	436,485
2044 *	770,203		770,203	770,203	436,483

\* Maturity

Revised redemption schedule was provided by legal counsel. GRS pro-rated the "Remaining Redemption Requirements Outstanding" based on the amount of bonds held by the VEBA as of the valuation date.

## **SECTION E**

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### **METHODS AND ASSUMPTIONS**

# Valuation Methods and Assumptions

## Data Related Assumptions

1. Those opting out of Medicare Advantage plans were assumed to continue opting out.
2. Retirees over the age of 65 who are receiving an HRA payment were assumed not to be Medicare eligible.
3. Retirees under the age of 65 who are indicated as receiving a Medicare health care plan were assumed to be disabled.
4. Retirees under age 65 receiving an HRA payment were assumed to be eligible for Medicare at age 65 and choose a single coverage Aetna MA plan when Medicare eligible.
5. In cases where the HRA information differed from the “MedPlan” information, it was assumed that the “MedPlan” information superseded the HRA information.
6. ID's provided were not unique. An ID was created using a combination of date of birth, gender and name.
7. HRA benefit amounts were provided. The benefit amounts were assigned to the primary and/or secondary person on the record based on whether the people listed on the records were over or under age 65, where applicable.
8. No amounts were provided for members with Medicare Advantage coverage. The number of persons covered by the Medicare Advantage plan was determined with the assistance of the Medical Tier column.
9. There were 7 records indicating an HRA benefit of \$340, which can correlate to two people receiving a \$170 “Income under \$70,000 and State Exchange” benefit. The benefit summary only allows this benefit for the retiree. For purposes of this valuation, they were assumed to have the \$120 Non-Medicare Spouse benefit.

**Valuation Method:** Present Value of Future Benefit compared to current assets.

**Rates of Investment Return.** **4.0% per year**, compounded annually, net of investment expenses. This rate is based on the currently held bond yield. This assumption is used to equate the value of payments due at different points in time. In the cash flow analysis, this rate of return is applied to assets in the Trust. The interest payable on the bond prior to monetization is modeling under the terms of the bond.

# Valuation Methods and Assumptions

## Mortality Assumptions

Sample Attained Ages	Police and Fire	
	RP-2014 Blue Collar Male	RP-2014 Blue Collar Female
20	0.0528%	0.0190%
25	0.0741	0.0264
30	0.0970	0.0428
35	0.1315	0.0724
40	0.1878	0.1194
45	0.2761	0.1880
50	0.4064	0.2822
55	0.5999	0.4025
60	0.8456	0.5735
65	1.2615	0.8725
70	1.9687	1.3966
75	3.1507	2.2971
80	5.1859	3.8164

## Valuation Methods and Assumptions (Concluded)

**Health Care Trend Assumptions applied to Trust payment toward Medicare Advantage (cost of premium in excess of Trust payment is paid by participant):** None assumed.

HRA benefit levels were assumed to be fixed at current levels.

**Administrative Expenses:** Administrative expenses (\$402,278 in 2018) are assumed to increase by 3.0% per year pro-rated by the number of remaining participants. All other expenses (\$399,797 in Fiscal Year 2018) are assumed are assumed to increase by 3.0% per year. All expenses are assumed to be \$0 when less than 0.50% of valuation population remains. Expenses are assumed to be \$800,000 in 2019.

The rationale for these assumptions is as follows:

**Investment Return Assumption:** The rate specified by the Bond.

**Mortality:** The underlying table used in the Police and Fire Retirement System.

**Health Care Trend:** Based on current Plan design and Plan limited experience of not providing benefit increases.

**Other:** Professional judgment.

## SECTION F

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### SENSITIVITY TESTING

## Sensitivity Testing Results

Sensitivity testing is an important component of the services GRS provides to the Board of Trustees. We have developed a modeling tool that allows for the plan solvency to be tested under different parameters, such as different benefit levels, different levels of utilization; different values for the monetization of the B-notes, etc. The model has been demonstrated to the Board, interactively.

Therefore, we have projected the Plan's results under alternative assumptions for future investment income as follows:

1. Current valuation assumed rate of return (4.00% investment return net of investment expenses and 55% bond monetization).
2. Current valuation assumed rate of return (4.00% investment return net of investment expenses and 80% bond monetization).
3. Assumed rate of return (5.00% investment return net of investment expenses and 55% bond monetization).
4. Assumed rate of return (5.00% investment return net of investment expenses and 80% bond monetization).
5. Assumed rate of return (3.00% investment return net of investment expenses and 55% bond monetization).
6. Assumed rate of return (3.00% investment return net of investment expenses and 80% bond monetization).
7. Alternate scenario with 100% utilization for current participants (4.00% investment return net of investment expenses and 55% bond monetization).
8. Current + 2% annual increases (4% interest, 55% bond monetization, various utilization).

The summary of each of these scenarios on the principal valuation results is presented on the following page.

Note that alternate investment return assumptions apply in all future years but only to invested assets. Prior to monetization, interest on the bond is based on the terms of the bond in the projections. Because the monetization is assumed to occur in 2030, changes in the investment return assumption have a bigger effect on current funded status than solvency date. If the date of the monetization is moved sooner, changes in the investment return assumption will have a greater effect on the solvency date.

# Sensitivity Testing Results

\$ in Millions<sup>^</sup>

	(Baseline)						Alternate - Current with 100% Utilization	Alternate - Current with 2% Benefit Increases
	Current Valuation Assumptions	4% Return, 80% of Bond Value	5% Return, 55% of Bond Value	5% Return, 80% of Bond Value	3% Return, 55% of Bond Value	3% Return, 80% of Bond Value		
		1	2	3	4	5	6	7
Assumed Investment Return		4.00%	4.00%	5.00%	5.00%	3.00%	3.00%	4.00%
Monetization		55.00%	80.00%	55.00%	80.00%	55.00%	80.00%	55.00%
A) Assets								
1) Bond Value		\$233.9	\$233.9	\$233.9	\$233.9	\$233.9	\$233.9	\$233.9
2) Monetization		55%	80%	55%	80%	55%	80%	55%
3) Market value of Bond		\$128.6	\$187.1	\$128.6	\$187.1	\$128.6	\$187.1	\$128.6
4) Investable Assets		\$19.5	\$19.5	\$19.5	\$19.5	\$19.5	\$19.5	\$19.5
5) Assets		\$148.2	\$206.6	\$148.2	\$206.6	\$148.2	\$206.6	\$148.2
B) Present Value of Future Contributions		\$0.5	\$0.5	\$0.5	\$0.5	\$0.6	\$0.6	\$0.5
C) Actuarial Results								
1) Liabilities - Present Value of Benefits		122.0	122.0	112.0	112.0	133.8	133.8	138.8
2) Liabilities - PV of Future Expenses		21.4	21.4	17.8	17.8	26.3	26.3	21.4
3) Present Value of Benefits/Expenses		\$143.5	\$143.5	\$129.8	\$129.8	\$160.2	\$160.2	\$168.4
D) Asset Surplus/(Deficit) [A.5+B-C.3]		\$5.22	\$63.7	\$18.8	\$77.3	\$(11.43)	\$47.0	\$(11.52)
E) Funded Ratio [(A.5+B)/C.3]		103.6%	144.4%	114.5%	159.6%	92.9%	129.4%	92.8%
F) Projected Insolvency Date <sup>#</sup>		Never	Never	Never	Never	Never	Never	Never
Increase/(Decrease) in								
G) Surplus/(Deficit)		\$0.0	\$58.5	\$13.6	\$72.09	\$(16.64)	\$41.83	\$(16.73)
H) Funded Ratio		0.0%	40.8%	10.9%	56.0%	(10.7)%	25.8%	(10.8)%
								(15.3)%

# Assuming bonds held to maturity.

<sup>^</sup> Totals may not add due to rounding.

# City of Detroit Police and Fire Retiree Health Care Trust

## Scenario 1 Baseline (4.0% Return with 55% Monetization)

MA PPO	MA HMO	Opt-Out HRA	Current Participants								Potential Future Participants			Group Description
			Retiree HRA								Spouse HRA (Non-Med Elig)	Spouse Not Receiving	Actively Waived	No Enrollment Election
4,747	\$ 90.00	\$ 85.00	\$ 145.58	\$ 170.00	\$ 395.00	\$ 120.00	\$ 295.00	\$ 85.00	\$ 120.00	n/a	n/a	n/a	n/a	Current Monthly Amount
4,709	136	1,957	-	43	370	1,091	134	1	319	705	54	1,033	1,033	Number in Group 12/31/2017
4,709	134	1,222	-	519	336	960	39	-	555	743	-	406	406	Number in Group 12/31/2018
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	Include Group
\$ -	\$ -	\$ 120.00	\$ 145.58	\$ 170.00	\$ 395.00	\$ 120.00	\$ 295.00	\$ 120.00	\$ 120.00					Flat Dollar Monthly Lifetime Benefit (per person) Pre-65
\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 295.00	\$ 120.00	\$ 120.00					Flat Dollar Monthly Lifetime Benefit (per person) Post-65
100%	100%	100%	50%	50%	50%	50%	50%	50%	50%					Utilization Percentage Pre-65 (Applies to Flat Dollar Only)
100%	100%	100%	100%	100%	100%	100%	100%	100%	100%					Utilization Percentage Post-65 (Applies to Flat Dollar Only)
0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	Annual increase in Flat Dollar Benefit

**\$253,900,999** Original Face Value of Bonds at 12/10/2014  
**\$228,245,662** Face Value of Bond (A) at Val Date  
**\$5,655,337** Face Value of Bond (B) at Val Date  
**55%** MV of Bond (used to calculate UAAL)  
**\$19,524,337** Investable Assets\*

**Never** Year of Insolvency  
**Never** Year Monetization/Cash is Needed  
**4.00%** Average Yield

**122,028,066** Present Value of Benefits  
**21,445,989** Present Value of Expenses  
**143,474,055** Total  
**148,169,886** Valuation Assets (Immediate Monetization)^  
**(4,695,831)** Unfunded Actuarial Liability (UAL)  
**519,884** Present Value of Future Contributions  
**(5,215,715)** Asset Deficit/(Surplus)  
**103.6%** Funded %

**Notes:**  
\* Excludes accrued interest receivable as it is already accounted for in the cash flow projection.  
# Bond coupon payment does not accrue additional interest during the year in which it is paid.  
^ Valuation assets include monetized valuation of bond and indicated monetization rate plus cash and receivables.

Year	Ad-Hoc					Trust			Interest					Dec. 31 Assets	% Contracts Remaining	
	Ad-Hoc Prem. Increase	Investment Return	Optional Bond Sale	Optional % Of Face	Face Value of Bonds BoY	Principal Repayment	Jan 1. Assets*	Benefit Payments	Expenses	Grant / (Due City)	Bond Coupon	Invested Assets	Ben./Expen./ Grant/Bond#	Total		
2019	N/A	4.00%	\$ 20,000,000	86.50%	\$ 213,900,999	\$ -	\$ 36,824,337	\$ (8,680,535)	\$ (800,000)	\$ 43,750	\$ 8,956,040	\$ 1,472,973	\$ (188,736)	\$ 10,240,278	\$ 37,627,830	97%
2020	0.00%	4.00%	-	-	213,900,999	-	\$ 37,627,830	\$ (10,656,871)	\$ (796,598)	\$ 43,750	\$ 8,556,040	\$ 1,505,113	\$ (228,194)	9,832,959	36,051,070	93%
2021	0.00%	4.00%	-	-	213,900,999	-	\$ 36,051,070	\$ (10,340,456)	\$ (805,963)	\$ 43,750	\$ 8,556,040	\$ 1,442,043	\$ (222,053)	9,776,029	34,724,430	90%
2022	0.00%	4.00%	-	-	213,900,999	-	\$ 34,724,430	\$ (10,007,195)	\$ (815,128)	\$ 43,750	\$ 8,556,040	\$ 1,388,977	\$ (215,571)	9,729,446	33,675,303	86%
2023	0.00%	4.00%	-	-	213,900,999	-	\$ 33,675,303	\$ (9,668,923)	\$ (824,099)	\$ 43,750	\$ 8,556,040	\$ 1,347,012	\$ (208,985)	9,694,067	32,920,098	83%
2024	0.00%	4.00%	-	-	213,900,999	-	\$ 32,920,098	\$ (9,314,840)	\$ (832,876)	\$ 43,750	\$ 8,556,040	\$ 1,316,804	\$ (202,079)	9,670,765	32,486,897	80%
2025	0.00%	4.00%	-	-	212,717,743	1,183,256	\$ 33,670,153	\$ (8,963,382)	\$ (841,452)	\$ 43,750	\$ 8,508,710	\$ 1,346,806	\$ (195,222)	9,660,294	33,569,362	76%
2026	0.00%	4.00%	-	-	211,610,104	1,107,640	\$ 34,677,002	\$ (8,593,739)	\$ (849,821)	\$ 43,750	\$ 8,464,404	\$ 1,387,080	\$ (187,996)	9,663,488	34,940,679	73%
2027	0.00%	4.00%	-	-	210,565,676	1,044,428	\$ 35,985,107	\$ (8,216,840)	\$ (857,972)	\$ 43,750	\$ 8,422,627	\$ 1,439,404	\$ (180,621)	9,681,410	36,635,455	69%
2028	0.00%	4.00%	-	-	209,595,064	970,611	\$ 37,606,066	\$ (7,850,298)	\$ (865,897)	\$ 43,750	\$ 8,383,803	\$ 1,504,243	\$ (173,449)	9,714,596	38,648,217	66%
2029	0.00%	4.00%	-	-	208,707,775	887,289	\$ 39,535,506	\$ (7,479,817)	\$ (873,584)	\$ 43,750	\$ 8,348,311	\$ 1,581,420	\$ (166,193)	9,763,538	40,989,393	63%
2030	0.00%	4.00%	-	-	207,914,480	793,295	\$ 41,782,688	\$ (7,107,299)	\$ (881,041)	\$ 43,750	\$ 8,316,579	\$ 1,671,308	\$ (158,892)	9,828,995	43,667,092	59%
2031	0.00%	4.00%	-	-	196,198,013	11,716,467	\$ 55,383,559	\$ (6,732,321)	\$ (888,278)	\$ 43,750	\$ 7,847,921	\$ 2,215,342	\$ (151,537)	9,911,726	57,718,436	56%
2032	0.00%	4.00%	-	-	183,955,253	12,242,760	\$ 69,961,197	\$ (6,360,337)	\$ (895,315)	\$ 43,750	\$ 7,358,210	\$ 2,798,448	\$ (144,238)	10,012,420	72,761,714	52%
2033	0.00%	4.00%	-	-	171,222,144	12,733,109	\$ 85,494,823	\$ (5,970,579)	\$ (902,192)	\$ 43,750	\$ 6,848,886	\$ 3,419,793	\$ (136,580)	10,132,098	88,797,900	49%
2038	0.00%	4.00%	-	-	93,393,893	15,565,650	\$ 192,904,972	\$ (4,085,432)	\$ (936,727)	-	\$ 5,603,634	\$ 7,716,199	\$ (100,443)	13,219,389	201,102,202	34%
2043	0.00%	4.00%	-	-	15,565,643	15,565,650	\$ 315,267,571	\$ (2,540,711)	\$ (982,307)	-	\$ 933,939	\$ 12,610,703	\$ (70,460)	13,474,181	325,218,733	21%
2048	0.00%	4.00%	-	-	-	385,809,140	\$ (1,449,648)	\$ (1,055,092)	-	-	\$ 15,432,366	\$ (50,095)	15,382,271	398,686,670	12%	
2053	0.00%	4.00%	-	-	-	456,896,911	\$ (788,904)	\$ (1,163,535)	-	-	\$ 18,275,876	\$ (39,049)	18,236,828	473,181,300	6%	
2058	0.00%	4.00%	-	-	-	545,716,390	\$ (404,031)	\$ (1,308,763)	-	-	\$ 21,828,656	\$ (34,256)	21,794,400	565,797,997	3%	
2063	0.00%	4.00%	-	-	-	654,627,245	\$ (189,189)	\$ (1,491,350)	-	-	\$ 26,185,090	\$ (33,611)	26,151,479	679,098,185	2%	
2068	0.00%	4.00%	-	-	-	786,985,161	\$ (78,420)	\$ (1,713,429)	-	-	\$ 31,479,406	\$ (35,837)	31,443,569	816,636,881	1%	

# City of Detroit Police and Fire Retiree Health Care Trust

## Scenario 2 (4.0% Return with 80% Monetization)

MA PPO	MA HMO	Opt-Out HRA	Current Participants								Potential Future Participants			Group Description
			Retiree HRA								Spouse HRA (Non-Med Elig)	Spouse Not Receiving	Actively Waived	No Enrollment Election
\$ 90.00	\$ 90.00	\$ 85.00	\$ 145.58	\$ 170.00	\$ 395.00	\$ 120.00	\$ 295.00	\$ 85.00	\$ 120.00	n/a	n/a	n/a	n/a	Current Monthly Amount
4,747	136	1,957	-	43	370	1,091	134	1	319	705	54	1,033	406	Number in Group 12/31/2017
4,709	134	1,222	-	519	336	960	39	-	555	743	-	-	406	Number in Group 12/31/2018
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	Include Group
\$ -	\$ -	\$ 120.00	\$ 145.58	\$ 170.00	\$ 395.00	\$ 120.00	\$ 295.00	\$ 120.00	\$ 120.00					Flat Dollar Monthly Lifetime Benefit (per person) Pre-65
\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00					Flat Dollar Monthly Lifetime Benefit (per person) Post-65
100%	100%	100%	50%	50%	50%	50%	50%	50%	50%					Utilization Percentage Pre-65 (Applies to Flat Dollar Only)
100%	100%	100%	100%	100%	100%	100%	100%	100%	100%					Utilization Percentage Post-65 (Applies to Flat Dollar Only)
0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	Annual increase in Flat Dollar Benefit

\$253,900,999 Original Face Value of Bonds at 12/10/2014

\$228,245,662 Face Value of Bond (A) at Val Date

\$5,655,337 Face Value of Bond (B) at Val Date

80% MV of Bond (used to calculate UAAL)

\$19,524,337 Investable Assets\*

Never Year of Insolvency

Never Year Monetization/Cash is Needed

4.00% Average Yield

122,028,066 Present Value of Benefits

21,445,989 Present Value of Expenses

143,474,055 Total

206,645,136 Valuation Assets (Immediate Monetization)^

(63,171,081) Unfunded Actuarial Liability (UAL)

519,884 Present Value of Future Contributions

(63,690,965) Asset Deficit/(Surplus)

144.4% Funded %

### Notes:

\* Excludes accrued interest receivable as it is already accounted for in the cash flow projection.

# Bond coupon payment does not accrue additional interest during the year in which it is paid.

^ Valuation assets include monetized valuation of bond and indicated monetization rate plus cash and receivables.

Year	Ad-Hoc				Trust				Interest				Dec. 31 Assets	% Contracts Remaining	
	Ad-Hoc Prem. Increase	Investment Return	Optional Bond Sale	Optional % Of Face	Face Value of Bonds BoY	Principal Repayment	Jan 1. Assets*	Benefit Payments	Grant / (Due City)	Bond Coupon	Invested Assets	Ben./Expen./ Grant/Bond#	Total		
2019	N/A	4.00%	\$ 20,000,000	86.50%	\$213,900,999	\$ -	\$ 36,824,337	\$ (8,680,535)	\$ (800,000)	\$ 43,750	\$ 8,956,040	\$ 1,472,973	\$ (188,736)	\$ 10,240,278	\$ 37,627,830
2020	0.00%	4.00%	-	-	213,900,999	-	37,627,830	(10,656,871)	(796,598)	43,750	8,556,040	1,505,113	(228,194)	9,832,959	36,051,070
2021	0.00%	4.00%	-	-	213,900,999	-	36,051,070	(10,340,456)	(805,963)	43,750	8,556,040	1,442,043	(222,053)	9,776,029	34,724,430
2022	0.00%	4.00%	-	-	213,900,999	-	34,724,430	(10,007,195)	(815,128)	43,750	8,556,040	1,388,977	(215,571)	9,729,446	33,675,303
2023	0.00%	4.00%	-	-	213,900,999	-	33,675,303	(9,668,923)	(824,099)	43,750	8,556,040	1,347,012	(208,985)	9,694,067	32,920,098
2024	0.00%	4.00%	-	-	213,900,999	-	32,920,098	(9,314,840)	(832,876)	43,750	8,556,040	1,316,804	(202,079)	9,670,765	32,486,897
2025	0.00%	4.00%	-	-	212,717,743	1,183,256	33,670,153	(8,963,382)	(841,452)	43,750	8,508,710	1,346,806	(195,222)	9,660,294	33,569,362
2026	0.00%	4.00%	-	-	211,610,104	1,107,640	34,677,002	(8,593,739)	(849,821)	43,750	8,464,404	1,387,080	(187,996)	9,663,488	34,940,679
2027	0.04%	4.00%	-	-	210,565,676	1,044,428	35,985,107	(8,216,840)	(857,972)	43,750	8,422,627	1,439,404	(180,621)	9,681,410	36,635,455
2028	0.00%	4.00%	-	-	209,595,064	970,611	37,606,066	(7,850,298)	(865,897)	43,750	8,383,803	1,504,243	(173,449)	9,714,596	38,648,217
2029	0.00%	4.00%	-	-	208,707,775	887,289	39,535,506	(7,479,817)	(873,584)	43,750	8,348,311	1,581,420	(166,193)	9,763,538	40,989,393
2030	0.00%	4.00%	-	-	207,914,480	793,295	41,782,688	(7,107,299)	(881,041)	43,750	8,316,579	1,671,308	(158,892)	9,828,995	43,667,092
2031	0.00%	4.00%	-	-	196,198,013	11,716,467	55,383,559	(6,732,321)	(888,278)	43,750	7,847,921	2,215,342	(151,537)	9,911,726	57,718,436
2032	0.00%	4.00%	-	-	183,955,253	12,242,760	69,961,197	(6,360,337)	(895,315)	43,750	7,358,210	2,798,448	(144,238)	10,012,420	72,761,714
2033	0.00%	4.00%	-	-	171,222,144	12,733,109	85,494,823	(5,970,579)	(902,192)	43,750	6,848,886	3,419,793	(136,580)	10,132,098	88,797,900
2038	0.00%	4.00%	-	-	93,393,893	15,565,650	192,904,972	(4,085,432)	(936,727)	-	5,603,634	7,716,199	(100,443)	13,219,389	201,102,202
2043	0.00%	4.00%	-	-	15,565,643	15,565,650	315,267,571	(2,540,711)	(982,307)	-	933,939	12,610,703	(70,460)	13,474,181	325,218,733
2048	0.00%	4.00%	-	-	-	385,809,140	(1,449,648)	(1,055,092)	-	-	15,432,366	(50,095)	15,382,271	398,686,670	
2053	0.00%	4.00%	-	-	-	456,896,911	(788,904)	(1,163,535)	-	-	18,275,876	(39,049)	18,236,828	473,181,300	
2058	0.00%	4.00%	-	-	-	545,716,390	(404,031)	(1,308,763)	-	-	21,828,656	(34,256)	21,794,400	565,797,997	
2063	0.00%	4.00%	-	-	-	654,627,245	(189,189)	(1,491,350)	-	-	26,185,090	(33,611)	26,151,479	679,098,185	
2068	0.00%	4.00%	-	-	-	786,985,161	(78,420)	(1,713,429)	-	-	31,479,406	(35,837)	31,443,569	816,636,881	

# City of Detroit Police and Fire Retiree Health Care Trust

## Scenario 3 (5.0% Return with 55% Monetization)

MA PPO	MA HMO	Opt-Out HRA	Current Participants								Potential Future Participants			Group Description	
			Retiree HRA								Spouse HRA (Non-Med Elig)	Spouse Not Receiving	Actively Waived	No Enrollment Election	
			Below FPL	Income Level	Non-Med Duty Dis	Non-Med Elig	Over 65 Non-Med Elig	Over 65 Unsub	Spouse HRA (Non-Med Elig)						
\$ 90.00	\$ 90.00	\$ 85.00	\$ 145.58	\$ 170.00	\$ 395.00	\$ 120.00	\$ 295.00	\$ 85.00	\$ 120.00	n/a	n/a	n/a	n/a	Current Monthly Amount	
4,747	136	1,957	-	43	370	1,091	134	1	319	705	54	1,033	1,033	Number in Group 12/31/2017	
4,709	134	1,222	-	519	336	960	39	-	555	743	-	406	406	Number in Group 12/31/2018	
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	Include Group	
\$ -	\$ -	\$ 120.00	\$ 145.58	\$ 170.00	\$ 395.00	\$ 120.00	\$ 295.00	\$ 120.00	\$ 120.00					Flat Dollar Monthly Lifetime Benefit (per person) Pre-65	
\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 295.00	\$ 120.00	\$ 120.00					Flat Dollar Monthly Lifetime Benefit (per person) Post-65	
100%	100%	100%	50%	50%	50%	50%	50%	50%	50%					Utilization Percentage Pre-65 (Applies to Flat Dollar Only)	
100%	100%	100%	100%	100%	100%	100%	100%	100%	100%					Utilization Percentage Post-65 (Applies to Flat Dollar Only)	
0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	Annual increase in Flat Dollar Benefit	
\$253,900,999			Original Face Value of Bonds at 12/10/2014								Notes:				
\$228,245,662			Face Value of Bond (A) at Val Date								* Excludes accrued interest receivable as it is already accounted for in the cash flow projection.				
\$5,655,337			Face Value of Bond (B) at Val Date								# Bond coupon payment does not accrue additional interest during the year in which it is paid.				
55% MV of Bond (used to calculate UAAL)			111,972,741 Present Value of Benefits								^ Valuation assets include monetized valuation of bond and indicated monetization				
\$19,524,337			17,848,308 Present Value of Expenses								rate plus cash and receivables.				
			129,821,049 Total												
			148,169,886 Valuation Assets (Immediate Monetization)^												
			(18,348,837) Unfunded Actuarial Liability (UAL)												
			485,862 Present Value of Future Contributions												
			(18,834,699) Asset Deficit/(Surplus)												
			114.5% Funded %												
Ad-Hoc															
Year	Ad-Hoc Prem. Increase	Investment Return	Optional Bond Sale	Optional % Of Face	Face Value of Bonds BoY	Principal Repayment	Jan 1. Assets*	Benefit Payments	Expenses	Grant / (Due City)	Bond Coupon	Invested Assets	Ben./Expen./ Grant/Bond#	Dec. 31 Total Assets	% Remaining
2019	N/A	5.00%	\$ 20,000,000	86.50%	\$ 213,900,999	\$ -	\$ 36,824,337	\$ (8,680,535)	\$ (800,000)	\$ 43,750	\$ 8,956,040	\$ 1,841,217	\$ (235,920)	\$ 10,561,337	\$ 37,948,889 97%
2020	0.00%	5.00%	-	-	213,900,999	-	37,948,889	(10,656,871)	(796,598)	43,750	\$ 8,556,040	\$ 1,897,444	(285,243)	10,168,241	36,707,412 93%
2021	0.00%	5.00%	-	-	213,900,999	-	36,707,412	(10,340,456)	(805,963)	43,750	\$ 8,556,040	\$ 1,835,371	(277,567)	10,113,844	35,718,586 90%
2022	0.00%	5.00%	-	-	213,900,999	-	35,718,586	(10,007,195)	(815,128)	43,750	\$ 8,556,040	\$ 1,785,929	(269,464)	10,072,505	35,012,519 86%
2023	0.00%	5.00%	-	-	213,900,999	-	35,012,519	(9,668,923)	(824,099)	43,750	\$ 8,556,040	\$ 1,750,626	(261,232)	10,045,434	34,608,681 83%
2024	0.00%	5.00%	-	-	213,900,999	-	34,608,681	(9,314,840)	(832,876)	43,750	\$ 8,556,040	\$ 1,730,434	(252,599)	10,033,875	34,538,590 80%
2025	0.00%	5.00%	-	-	212,717,743	1,183,256	35,721,846	(8,963,382)	(841,452)	43,750	\$ 8,508,710	\$ 1,786,092	(244,027)	10,050,775	36,011,536 76%
2026	0.00%	5.00%	-	-	211,610,104	1,107,640	37,119,176	(8,593,739)	(849,821)	43,750	\$ 8,464,404	\$ 1,855,959	(234,995)	10,085,368	37,804,733 73%
2027	0.00%	5.00%	-	-	210,565,676	1,044,428	38,849,161	(8,216,840)	(857,972)	43,750	\$ 8,422,627	\$ 1,942,458	(225,777)	10,139,309	39,957,407 69%
2028	0.00%	5.00%	-	-	209,595,064	970,611	40,928,018	(7,850,298)	(865,897)	43,750	\$ 8,383,803	\$ 2,046,401	(216,811)	10,213,392	42,468,966 66%
2029	0.00%	5.00%	-	-	208,707,775	887,289	43,356,255	(7,479,817)	(873,584)	43,750	\$ 8,348,311	\$ 2,167,813	(207,741)	10,308,382	45,354,985 63%
2030	0.00%	5.00%	-	-	207,914,480	793,295	46,148,281	(7,107,299)	(881,041)	43,750	\$ 8,316,579	\$ 2,307,414	(198,615)	10,425,378	48,629,069 59%
2031	0.00%	5.00%	-	-	196,198,013	11,716,467	60,345,536	(6,732,321)	(888,278)	43,750	\$ 7,847,921	\$ 3,017,277	(189,421)	10,675,776	63,444,463 56%
2032	0.00%	5.00%	-	-	183,955,253	12,242,760	75,687,223	(6,360,337)	(895,315)	43,750	\$ 7,358,210	\$ 3,784,361	(180,298)	10,962,274	79,437,595 52%
2033	0.00%	5.00%	-	-	171,222,144	12,733,109	92,170,704	(5,970,579)	(902,192)	43,750	\$ 6,848,886	\$ 4,608,535	(170,726)	11,286,695	96,628,378 49%
2038	0.00%	5.00%	-	-	93,393,893	15,565,650	208,100,242	(4,085,432)	(936,727)	-	\$ 5,603,634	\$ 10,405,012	(125,554)	15,883,092	218,961,174 34%
2043	0.00%	5.00%	-	-	15,565,643	15,565,650	347,732,827	(2,540,711)	(982,307)	-	\$ 933,939	\$ 17,386,641	(88,075)	18,232,504	362,442,313 21%
2048	0.00%	5.00%	-	-	-	446,343,086	(1,449,648)	(1,055,092)	-	-	-	22,317,154	(62,619)	22,254,536	466,092,881 12%
2053	0.00%	5.00%	-	-	-	556,833,022	(788,904)	(1,163,535)	-	-	-	27,841,651	(48,811)	27,792,840	582,673,423 6%
2058	0.00%	5.00%	-	-	-	700,245,364	(404,031)	(1,308,763)	-	-	-	35,012,268	(42,820)	34,969,448	733,502,019 3%
2063	0.00%	5.00%	-	-	-	884,154,289	(189,189)	(1,491,350)	-	-	-	44,207,714	(42,013)	44,165,701	926,639,450 2%
2068	0.00%	5.00%	-	-	-	1,118,724,535	(78,420)	(1,713,429)	-	-	-	55,936,227	(44,796)	55,891,431	1,172,824,117 1%

# City of Detroit Police and Fire Retiree Health Care Trust

## Scenario 4 (5.0% Return with 80% Monetization)

Current Participants												Potential Future Participants			Group Description
MA PPO	MA HMO	Opt-Out HRA	Retiree HRA							Spouse HRA (Non-Med Elig)	Spouse Not Receiving	Actively Waived	No Enrollment Election		
			Below FPL	Income Level	Non-Med Duty Dis	Non-Med Elig	Over 65 Non-Med Elig	Over 65 Unsub							
\$ 90.00	\$ 90.00	\$ 85.00	\$ 145.58	\$ 170.00	\$ 395.00	\$ 120.00	\$ 295.00	\$ 85.00	\$ 120.00	n/a	n/a	n/a	n/a	Current Monthly Amount	
4,747	136	1,957	-	43	370	1,091	134	1	319	705	54	1,033	406	Number in Group 12/31/2017	
4,709	134	1,222	-	519	336	960	39	-	555	743	-	-	406	Number in Group 12/31/2018	
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	Include Group	
\$ -	\$ -	\$ 120.00	\$ 145.58	\$ 170.00	\$ 395.00	\$ 120.00	\$ 295.00	\$ 120.00	\$ 120.00					Flat Dollar Monthly Lifetime Benefit (per person) Pre-65	
\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00					Flat Dollar Monthly Lifetime Benefit (per person) Post-65	
100%	100%	100%	50%	50%	50%	50%	50%	50%	50%					Utilization Percentage Pre-65 (Applies to Flat Dollar Only)	
100%	100%	100%	100%	100%	100%	100%	100%	100%	100%					Utilization Percentage Post-65 (Applies to Flat Dollar Only)	
0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	Annual increase in Flat Dollar Benefit	

\$253,900,999	Original Face Value of Bonds at 12/10/2014
\$228,245,662	Face Value of Bond (A) at Val Date
\$5,655,337	Face Value of Bond (B) at Val Date
80%	MV of Bond (used to calculate UAAL)
\$19,524,337	Investable Assets*
Never	Year of Insolvency
Never	Year Monetization/Cash is Needed
5.00%	Average Yield

111,972,741	Present Value of Benefits
17,848,308	Present Value of Expenses
129,821,049	Total
206,645,136	Valuation Assets (Immediate Monetization)^
(76,824,087)	Unfunded Actuarial Liability (UAL)
485,862	Present Value of Future Contributions
(77,309,949)	Asset Deficit/(Surplus)
159.6%	Funded %

Notes:  
\* Excludes accrued interest receivable as it is already accounted for in the cash flow projection.  
# Bond coupon payment does not accrue additional interest during the year in which it is paid.  
^ Valuation assets include monetized valuation of bond and indicated monetization rate plus cash and receivables.

Year	Ad-Hoc						Trust						Interest			
	Ad-Hoc Prem. Increase	Investment Return	Optional Bond Sale	Optional % Of Face	Face Value of Bonds B/oY	Principal Repayment	Jan 1. Assets*	Benefit Payments	Expenses	Grant / (Due City)	Bond Coupon	Invested Assets	Ben./Expen./Grant/Bond#	Total	Dec. 31 Assets	% Remaining
2019	N/A	5.00%	\$ 20,000,000	86.50%	\$ 213,900,999	\$ -	\$ 36,824,337	\$ (8,680,535)	\$ (800,000)	\$ 43,750	\$ 8,956,040	\$ 1,841,217	\$ (235,920)	\$ 10,561,337	\$ 37,948,889	97%
2020	0.00%	5.00%	-	-	\$ 213,900,999	-	\$ 37,948,289	\$ (10,656,871)	\$ (796,598)	\$ 43,750	\$ 8,956,040	\$ 1,897,444	\$ (285,243)	\$ 10,168,241	\$ 36,707,412	93%
2021	0.00%	5.00%	-	-	\$ 213,900,999	-	\$ 36,707,412	\$ (10,340,456)	\$ (805,963)	\$ 43,750	\$ 8,956,040	\$ 1,835,371	\$ (277,567)	\$ 10,113,844	\$ 35,718,586	90%
2022	0.00%	5.00%	-	-	\$ 213,900,999	-	\$ 35,718,586	\$ (10,007,195)	\$ (815,128)	\$ 43,750	\$ 8,956,040	\$ 1,785,929	\$ (269,464)	\$ 10,072,505	\$ 35,012,519	86%
2023	0.00%	5.00%	-	-	\$ 213,900,999	-	\$ 35,012,519	\$ (9,668,923)	\$ (824,099)	\$ 43,750	\$ 8,956,040	\$ 1,750,626	\$ (261,232)	\$ 10,045,434	\$ 34,608,681	83%
2024	0.00%	5.00%	-	-	\$ 213,900,999	-	\$ 34,608,681	\$ (9,314,840)	\$ (832,876)	\$ 43,750	\$ 8,956,040	\$ 1,730,434	\$ (252,599)	\$ 10,033,875	\$ 34,538,590	80%
2025	0.00%	5.00%	-	-	\$ 212,717,743	1,183,256	\$ 35,721,846	\$ (8,963,382)	\$ (841,452)	\$ 43,750	\$ 8,956,040	\$ 1,786,092	\$ (244,027)	\$ 10,050,775	\$ 36,011,536	76%
2026	0.00%	5.00%	-	-	\$ 211,610,104	1,107,640	\$ 37,119,176	\$ (8,593,739)	\$ (849,821)	\$ 43,750	\$ 8,956,040	\$ 1,855,959	\$ (234,995)	\$ 10,085,368	\$ 37,804,733	73%
2027	0.00%	5.00%	-	-	\$ 210,565,676	1,044,428	\$ 38,849,161	\$ (8,216,840)	\$ (857,972)	\$ 43,750	\$ 8,956,040	\$ 1,942,458	\$ (225,777)	\$ 10,139,309	\$ 39,957,407	69%
2028	0.00%	5.00%	-	-	\$ 209,595,064	970,611	\$ 40,928,018	\$ (7,850,298)	\$ (865,897)	\$ 43,750	\$ 8,956,040	\$ 2,046,401	\$ (216,811)	\$ 10,213,392	\$ 42,468,966	66%
2029	0.00%	5.00%	-	-	\$ 208,707,775	887,289	\$ 43,356,255	\$ (7,479,817)	\$ (873,584)	\$ 43,750	\$ 8,956,040	\$ 2,167,813	\$ (207,741)	\$ 10,308,382	\$ 45,354,985	63%
2030	0.00%	5.00%	-	-	\$ 207,914,480	793,295	\$ 46,148,281	\$ (7,107,299)	\$ (881,041)	\$ 43,750	\$ 8,956,040	\$ 2,307,414	\$ (198,615)	\$ 10,425,378	\$ 48,629,069	59%
2031	0.00%	5.00%	-	-	\$ 196,198,013	11,716,467	\$ 60,345,536	\$ (6,732,321)	\$ (888,278)	\$ 43,750	\$ 8,956,040	\$ 3,017,277	\$ (189,421)	\$ 10,675,776	\$ 63,444,463	56%
2032	0.00%	5.00%	-	-	\$ 183,955,253	12,242,760	\$ 75,687,223	\$ (6,360,337)	\$ (895,315)	\$ 43,750	\$ 8,956,040	\$ 3,784,361	\$ (180,298)	\$ 10,962,274	\$ 79,437,595	52%
2033	0.00%	5.00%	-	-	\$ 171,222,144	12,733,109	\$ 92,170,704	\$ (5,970,579)	\$ (902,192)	\$ 43,750	\$ 8,956,040	\$ 4,608,535	\$ (170,726)	\$ 11,286,695	\$ 96,628,378	49%
2038	0.00%	5.00%	-	-	\$ 93,393,893	15,565,650	\$ 208,100,242	\$ (4,085,432)	\$ (936,727)	-	\$ 5,603,634	\$ 10,405,012	\$ (125,554)	\$ 15,883,092	\$ 218,961,174	34%
2043	0.00%	5.00%	-	-	\$ 15,565,643	15,565,650	\$ 347,732,827	\$ (2,540,711)	\$ (982,307)	-	\$ 933,939	\$ 17,386,641	\$ (88,075)	\$ 18,232,504	\$ 362,442,313	21%
2048	0.00%	5.00%	-	-	-	\$ 446,343,086	\$ (1,449,648)	\$ (1,055,092)	-	-	\$ 22,317,154	\$ (62,619)	\$ 22,254,536	\$ 466,092,881	12%	
2053	0.00%	5.00%	-	-	-	\$ 556,833,022	\$ (788,904)	\$ (1,163,535)	-	-	\$ 27,841,651	\$ (48,811)	\$ 27,792,840	\$ 582,673,423	6%	
2058	0.00%	5.00%	-	-	-	\$ 700,245,364	\$ (404,031)	\$ (1,308,763)	-	-	\$ 35,012,268	\$ (42,820)	\$ 34,969,448	\$ 733,502,019	3%	
2063	0.00%	5.00%	-	-	-	\$ 884,154,289	\$ (189,189)	\$ (1,491,350)	-	-	\$ 44,207,714	\$ (42,013)	\$ 44,165,701	\$ 926,639,450	2%	
2068	0.00%	5.00%	-	-	-	\$ 1,118,724,535	\$ (78,420)	\$ (1,713,429)	-	-	\$ 55,936,227	\$ (44,796)	\$ 55,891,431	\$ 1,172,824,117	1%	

# City of Detroit Police and Fire Retiree Health Care Trust

## Scenario 5 (3.0% Return with 55% Monetization)

MA PPO	MA HMO	Opt-Out HRA	Current Participants								Potential Future Participants			Group Description	
			Retiree HRA								Spouse HRA (Non-Med Elig)	Spouse Not Receiving	Actively Waived	No Enrollment Election	
			Below FPL	Income Level	Non-Med Duty Dis	Non-Med Elig	Over 65 Non- Med Elig	Over 65 Unsub	Spouse HRA (Non-Med Elig)	Spouse Not Receiving	Actively Waived	No Enrollment Election			
\$ 90.00	\$ 90.00	\$ 85.00	\$ 145.58	\$ 170.00	\$ 395.00	\$ 120.00	\$ 295.00	\$ 85.00	\$ 120.00	n/a	n/a	n/a	1,033	Current Monthly Amount	
4,747	136	1,957	-	43	370	1,091	134	1	319	705	54	-	406	Number in Group 12/31/2017	
4,709	134	1,222	-	519	336	960	39	-	555	743	-	-	406	Number in Group 12/31/2018	
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	0	Include Group	
\$ -	\$ -	\$ 120.00	\$ 145.58	\$ 170.00	\$ 395.00	\$ 120.00	\$ 295.00	\$ 120.00	\$ 120.00				0	Flat Dollar Monthly Lifetime Benefit (per person) Pre-65	
\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 295.00	\$ 120.00	\$ 120.00				0	Flat Dollar Monthly Lifetime Benefit (per person) Post-65	
100%	100%	100%	50%	50%	50%	50%	50%	50%	50%				0	Utilization Percentage Pre-65 (Applies to Flat Dollar Only)	
100%	100%	100%	100%	100%	100%	100%	100%	100%	100%				0	Utilization Percentage Post-65 (Applies to Flat Dollar Only)	
0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	Annual increase in Flat Dollar Benefit	

\$253,900,999	Original Face Value of Bonds at 12/10/2014
\$228,245,662	Face Value of Bond (A) at Val Date
\$5,655,337	Face Value of Bond (B) at Val Date
55%	MV of Bond (used to calculate UAAL)
\$19,524,337	Investable Assets*
Never Year of Insolvency	
Never Year Monetization/Cash is Needed	
3.00%	Average Yield

133,834,950	Present Value of Benefits
26,320,060	Present Value of Expenses
160,155,010	Total
148,169,886	Valuation Assets (Immediate Monetization)^
11,985,124	Unfunded Actuarial Liability (UAL)
557,731	Present Value of Future Contributions
11,427,393	Asset Deficit/(Surplus)
92.9%	Funded %

Notes:  
\* Excludes accrued interest receivable as it is already accounted for in the cash flow projection.  
# Bond coupon payment does not accrue additional interest during the year in which it is paid.  
^ Valuation assets include monetized valuation of bond and indicated monetization rate plus cash and receivables.

Year	Ad-Hoc			Trust					Interest							
	Ad-Hoc Prem. Increase	Investment Return	Optional Bond Sale	Optional % Of Face	Face Value of Bonds BoY	Principal Repayment	Jan 1. Assets*	Benefit Payments	Grant / (Due City)	Bond Coupon	Invested Assets	Ben./Expen./ Grant/Bond#	Dec. 31 Assets	% Remaining		
2019	N/A	3.00%	\$ 20,000,000	86.50%	\$ 213,900,999	\$ -	\$ 36,824,337	\$ (8,680,535)	\$ (800,000)	\$ 43,750	\$ 8,956,040	\$ 1,104,730	\$ (141,552)	\$ 9,919,218	\$ 37,306,771	97%
2020	0.00%	3.00%	-	-	213,900,999	-	37,306,771	(10,656,871)	(796,598)	43,750	8,556,040	1,119,203	(171,146)	9,504,097	35,401,149	93%
2021	0.00%	3.00%	-	-	213,900,999	-	35,401,149	(10,340,456)	(805,963)	43,750	8,556,040	1,062,034	(166,540)	9,451,534	33,750,014	90%
2022	0.00%	3.00%	-	-	213,900,999	-	33,750,014	(10,007,195)	(815,128)	43,750	8,556,040	1,012,500	(161,679)	9,406,862	32,378,303	86%
2023	0.00%	3.00%	-	-	213,900,999	-	32,378,303	(9,668,923)	(824,099)	43,750	8,556,040	971,349	(156,739)	9,370,650	31,299,681	83%
2024	0.00%	3.00%	-	-	213,900,999	-	31,299,681	(9,314,840)	(832,876)	43,750	8,556,040	938,990	(151,559)	9,343,471	30,539,187	80%
2025	0.00%	3.00%	-	-	212,717,743	1,183,256	31,722,442	(8,963,382)	(841,452)	43,750	8,508,710	951,673	(146,416)	9,313,967	31,275,324	76%
2026	0.00%	3.00%	-	-	211,610,104	1,107,640	32,382,964	(8,593,739)	(849,821)	43,750	8,464,404	971,489	(140,997)	9,294,896	32,278,050	73%
2027	0.00%	3.00%	-	-	210,565,676	1,044,428	33,322,478	(8,216,840)	(857,972)	43,750	8,422,627	999,674	(135,466)	9,286,835	33,578,250	69%
2028	0.00%	3.00%	-	-	209,595,064	970,611	34,548,862	(7,850,298)	(865,897)	43,750	8,383,803	1,036,466	(130,087)	9,290,182	35,166,598	66%
2029	0.00%	3.00%	-	-	208,707,775	887,289	36,053,887	(7,479,817)	(873,584)	43,750	8,348,311	1,081,617	(124,645)	9,305,283	37,049,518	63%
2030	0.00%	3.00%	-	-	207,914,480	793,295	37,842,814	(7,107,299)	(881,041)	43,750	8,316,579	1,135,284	(119,169)	9,332,695	39,230,918	59%
2031	0.00%	3.00%	-	-	196,198,013	11,716,467	50,947,385	(6,732,321)	(888,278)	43,750	7,847,921	1,528,422	(113,653)	9,262,689	52,633,225	56%
2032	0.00%	3.00%	-	-	183,955,253	12,242,760	64,875,986	(6,360,337)	(895,315)	43,750	7,358,210	1,946,280	(108,179)	9,196,311	66,860,395	52%
2033	0.00%	3.00%	-	-	171,222,144	12,733,109	79,593,504	(5,970,579)	(902,192)	43,750	6,848,886	2,387,805	(102,435)	9,134,256	81,898,738	49%
2038	0.00%	3.00%	-	-	93,393,893	15,565,650	179,607,194	(4,085,432)	(936,727)	-	5,603,634	5,388,216	(75,332)	10,916,517	185,501,551	34%
2043	0.00%	3.00%	-	-	15,565,643	15,565,650	287,242,334	(2,540,711)	(982,307)	-	933,939	8,617,270	(52,845)	9,498,363	293,217,679	21%
2048	0.00%	3.00%	-	-	-	334,940,848	(1,449,648)	(1,055,092)	-	-	10,048,225	(37,571)	10,010,654	342,446,762	12%	
2053	0.00%	3.00%	-	-	-	376,109,026	(788,904)	(1,163,535)	-	-	11,283,271	(29,287)	11,253,984	385,410,571	6%	
2058	0.00%	3.00%	-	-	-	426,100,468	(404,031)	(1,308,763)	-	-	12,783,014	(25,692)	12,757,322	437,144,996	3%	
2063	0.00%	3.00%	-	-	-	484,877,291	(189,189)	(1,491,350)	-	-	14,546,319	(25,208)	14,521,111	497,717,862	2%	
2068	0.00%	3.00%	-	-	-	552,867,514	(78,420)	(1,713,429)	-	-	16,586,025	(26,878)	16,559,148	567,634,813	1%	

# City of Detroit Police and Fire Retiree Health Care Trust

## Scenario 6 (3.0% Return with 80% Monetization)

MA PPO	MA HMO	Opt-Out HRA	Current Participants								Potential Future Participants			Group Description	
			Retiree HRA								Spouse HRA (Non-Med Elig)	Spouse Not Receiving	Actively Waived	No Enrollment Election	
			Below FPL	Income Level	Non-Med Duty Dis	Non-Med Elig	Over 65 Non-Med Elig	Over 65 Unsub							
\$ 90.00	\$ 90.00	\$ 85.00	\$ 145.58	\$ 170.00	\$ 395.00	\$ 120.00	\$ 295.00	\$ 85.00	\$ 120.00	n/a	n/a	n/a	n/a	Current Monthly Amount	
4,747	136	1,957	-	43	370	1,091	134	1	319	705	54	1,033	1,033	Number in Group 12/31/2017	
4,709	134	1,222	-	519	336	960	39	-	555	743	-	406	406	Number in Group 12/31/2018	
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	Include Group	
\$ -	\$ -	\$ 120.00	\$ 145.58	\$ 170.00	\$ 395.00	\$ 120.00	\$ 295.00	\$ 120.00	\$ 120.00					Flat Dollar Monthly Lifetime Benefit (per person) Pre-65	
\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00					Flat Dollar Monthly Lifetime Benefit (per person) Post-65	
100%	100%	100%	50%	50%	50%	50%	50%	50%	50%					Utilization Percentage Pre-65 (Applies to Flat Dollar Only)	
100%	100%	100%	100%	100%	100%	100%	100%	100%	100%					Utilization Percentage Post-65 (Applies to Flat Dollar Only)	
0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	Annual increase in Flat Dollar Benefit	

\$253,900,999	Original Face Value of Bonds at 12/10/2014
\$228,245,662	Face Value of Bond (A) at Val Date
\$5,655,337	Face Value of Bond (B) at Val Date
80%	MV of Bond (used to calculate UAAL)
\$19,524,337	Investable Assets*
Never	Year of Insolvency
Never	Year Monetization/Cash is Needed
3.00%	Average Yield

133,834,950	Present Value of Benefits
26,320,060	Present Value of Expenses
160,155,010	<b>Total</b>
206,645,136	Valuation Assets (Immediate Monetization)^
(46,490,126)	Unfunded Actuarial Liability (UAL)
557,731	Present Value of Future Contributions
(47,047,857)	Asset Deficit/(Surplus)
129.4%	Funded %

### Notes:

\* Excludes accrued interest receivable as it is already accounted for in the cash flow projection.

# Bond coupon payment does not accrue additional interest during the year in which it is paid.

^ Valuation assets include monetized valuation of bond and indicated monetization rate plus cash and receivables.

Year	Ad-Hoc								Trust					Interest		
	Ad-Hoc Prem. Increase	Investment Return	Optional Bond Sale	Optional % Of Face	Face Value of Bonds BoY	Principal Repayment	Jan 1. Assets*	Benefit Payments	Expenses	Grant / (Due City)	Bond Coupon	Invested Assets	Ben./Expen./ Grant/Bond#	Total	Dec. 31 Assets	% Remaining
2019	N/A	3.00%	\$ 20,000,000	86.50%	\$ 213,900,999	\$ -	\$ 36,824,337	\$ (8,680,535)	\$ (800,000)	\$ 43,750	\$ 8,956,040	\$ 1,104,730	\$ (141,552)	\$ 9,919,218	\$ 37,306,771	97%
2020	0.00%	3.00%	-	-	213,900,999	-	37,306,771	(10,656,871)	(796,598)	43,750	8,556,040	1,119,203	(171,146)	9,504,097	35,401,149	93%
2021	0.00%	3.00%	-	-	213,900,999	-	35,401,149	(10,340,456)	(805,963)	43,750	8,556,040	1,062,034	(166,540)	9,451,534	33,750,014	90%
2022	0.00%	3.00%	-	-	213,900,999	-	33,750,014	(10,007,195)	(815,128)	43,750	8,556,040	1,012,500	(161,679)	9,406,862	32,378,303	86%
2023	0.00%	3.00%	-	-	213,900,999	-	32,378,303	(9,668,923)	(824,099)	43,750	8,556,040	971,349	(156,739)	9,370,650	31,299,681	83%
2024	0.00%	3.00%	-	-	213,900,999	-	31,299,681	(9,314,840)	(832,876)	43,750	8,556,040	938,990	(151,559)	9,343,471	30,539,187	80%
2025	0.00%	3.00%	-	-	212,717,743	1,183,256	31,722,442	(8,963,382)	(841,452)	43,750	8,508,710	951,673	(146,416)	9,313,967	31,275,324	76%
2026	0.00%	3.00%	-	-	211,610,104	1,107,640	32,382,964	(8,593,739)	(849,821)	43,750	8,464,404	971,489	(140,997)	9,294,896	32,278,050	73%
2027	0.00%	3.00%	-	-	210,565,676	1,044,428	33,322,478	(8,216,840)	(857,972)	43,750	8,422,627	999,674	(135,466)	9,286,835	33,578,250	69%
2028	0.00%	3.00%	-	-	209,595,064	970,611	34,548,862	(7,850,298)	(865,897)	43,750	8,383,803	1,036,466	(130,087)	9,290,182	35,166,598	66%
2029	0.00%	3.00%	-	-	208,707,775	887,289	36,053,887	(7,479,817)	(873,584)	43,750	8,348,311	1,081,617	(124,645)	9,305,283	37,049,518	63%
2030	0.00%	3.00%	-	-	207,914,480	793,295	37,842,814	(7,107,299)	(881,041)	43,750	8,316,579	1,135,284	(119,169)	9,332,695	39,230,918	59%
2031	0.00%	3.00%	-	-	196,198,013	11,716,467	50,947,385	(6,732,321)	(888,278)	43,750	7,847,921	1,528,422	(113,653)	9,262,689	52,633,225	56%
2032	0.00%	3.00%	-	-	183,955,253	12,242,760	64,875,986	(6,360,337)	(895,315)	43,750	7,358,210	1,946,280	(108,179)	9,196,311	66,860,395	52%
2033	0.00%	3.00%	-	-	171,222,144	12,733,109	79,593,504	(5,970,579)	(902,192)	43,750	6,848,886	2,387,805	(102,435)	9,134,256	81,898,738	49%
2038	0.00%	3.00%	-	-	93,393,893	15,565,650	179,607,194	(4,085,432)	(936,727)	-	5,603,634	5,388,216	(75,332)	10,916,517	185,501,551	34%
2043	0.00%	3.00%	-	-	15,565,643	15,565,650	287,242,334	(2,540,711)	(982,307)	-	933,939	8,617,270	(52,845)	9,498,363	293,217,679	21%
2048	0.00%	3.00%	-	-	-	334,940,848	(1,449,648)	(1,055,092)	-	-	10,048,225	(37,571)	10,010,654	342,446,762	12%	
2053	0.00%	3.00%	-	-	-	376,109,026	(788,904)	(1,163,535)	-	-	11,283,271	(29,287)	11,253,984	385,410,571	6%	
2058	0.00%	3.00%	-	-	-	426,100,468	(404,031)	(1,308,763)	-	-	12,783,014	(25,692)	12,757,322	437,144,996	3%	
2063	0.00%	3.00%	-	-	-	484,877,291	(189,189)	(1,491,350)	-	-	14,546,319	(25,208)	14,521,111	497,717,862	2%	
2068	0.00%	3.00%	-	-	-	552,867,514	(78,420)	(1,713,429)	-	-	16,586,025	(26,878)	16,559,148	567,634,813	1%	

# City of Detroit Police and Fire Retiree Health Care Trust

## Scenario 7 Alternate with 100% Utilization for Current Participants

### (4.0% Return with 55% Monetization)

MA PPO	MA HMO	Opt-Out HRA	Current Participants								Potential Future Participants			Group Description	
			Retiree HRA								Spouse HRA (Non-Med Elig)	Spouse Not Receiving	Actively Waived	No Enrollment Election	
			Below FPL	Income Level	Non-Med Duty Dis	Non-Med Elig	Over 65 Non- Med Elig	Over 65 Unsub							
\$ 90.00	\$ 90.00	\$ 85.00	\$ 145.58	\$ 170.00	\$ 395.00	\$ 120.00	\$ 295.00	\$ 85.00	\$ 120.00	n/a	n/a	n/a	n/a	Current Monthly Amount	
4,747	136	1,957	-	43	370	1,091	134	1	319	705	54	1,033	1,033	Number in Group 12/31/2017	
4,709	134	1,222	-	519	336	960	39	-	555	743	-	406	406	Number in Group 12/31/2018	
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	Include Group	
\$ -	\$ -	\$ 120.00	\$ 145.58	\$ 170.00	\$ 395.00	\$ 120.00	\$ 295.00	\$ 120.00	\$ 120.00					Flat Dollar Monthly Lifetime Benefit (per person) Pre-65	
\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 295.00	\$ 120.00	\$ 120.00					Flat Dollar Monthly Lifetime Benefit (per person) Post-65	
100%	100%	100%	100%	100%	100%	100%	100%	100%	100%					Utilization Percentage Pre-65 (Applies to Flat Dollar Only)	
100%	100%	100%	100%	100%	100%	100%	100%	100%	100%					Utilization Percentage Post-65 (Applies to Flat Dollar Only)	
0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	Annual increase in Flat Dollar Benefit	

\$253,900,999	Original Face Value of Bonds at 12/10/2014
\$228,245,662	Face Value of Bond (A) at Val Date
\$5,655,337	Face Value of Bond (B) at Val Date
55%	MV of Bond (used to calculate UAAL)
\$19,524,337	Investable Assets*
Never Year of Insolvency	
Never Year Monetization/Cash is Needed	
4.00%	Average Yield

138,762,655	Present Value of Benefits
21,445,989	Present Value of Expenses
160,208,644	<b>Total</b>
148,169,886	Valuation Assets (Immediate Monetization)^
12,038,758	Unfunded Actuarial Liability (UAL)
519,884	Present Value of Future Contributions
11,518,874	Asset Deficit/(Surplus)
92.8%	Funded %

#### Notes:

- \* Excludes accrued interest receivable as it is already accounted for in the cash flow projection.
- # Bond coupon payment does not accrue additional interest during the year in which it is paid.
- ^ Valuation assets include monetized valuation of bond and indicated monetization rate plus cash and receivables.

Year	Ad-Hoc				Trust				Interest				Dec. 31 Assets	% Remaining		
	Ad-Hoc Prem. Increase	Investment Return	Optional Bond Sale	Optional % Of Face	Face Value of Bonds BoY	Principal Repayment	Jan 1. Assets*	Benefit Payments	Expenses	Grant / (Due City)	Bond Coupon	Invested Assets	Ben./Expen./ Grant/Bond#	Total		
2019	N/A	4.00%	\$ 20,000,000	86.50%	\$ 213,900,999	\$ -	\$ 36,824,337	\$ (8,680,535)	\$ (800,000)	\$ 43,750	\$ 8,956,040	\$ 1,472,973	\$ (188,736)	\$ 10,240,278	\$ 37,627,830	97%
2020	0.00%	4.00%	-	-	213,900,999	-	37,627,830	(12,806,033)	(796,598)	43,750	8,556,040	1,505,113	(271,178)	9,789,976	33,858,925	93%
2021	0.00%	4.00%	-	-	213,900,999	-	33,858,925	(12,332,476)	(805,963)	43,750	8,556,040	1,354,357	(261,894)	9,648,503	30,412,739	90%
2022	0.00%	4.00%	-	-	213,900,999	-	30,412,739	(11,857,035)	(815,128)	43,750	8,556,040	1,216,510	(252,568)	9,519,981	27,304,307	86%
2023	0.00%	4.00%	-	-	213,900,999	-	27,304,307	(11,401,741)	(824,099)	43,750	8,556,040	1,092,172	(243,642)	9,404,570	24,526,788	83%
2024	0.00%	4.00%	-	-	213,900,999	-	24,526,788	(10,925,666)	(832,876)	43,750	8,556,040	981,072	(234,296)	9,302,816	22,114,811	80%
2025	0.00%	4.00%	-	-	212,717,743	1,183,256	23,298,067	(10,463,061)	(841,452)	43,750	8,508,710	931,923	(225,215)	9,215,417	21,252,721	76%
2026	0.00%	4.00%	-	-	211,610,104	1,107,640	22,360,361	(9,985,376)	(849,821)	43,750	8,464,404	894,414	(215,829)	9,142,990	20,711,903	73%
2027	0.00%	4.00%	-	-	210,565,676	1,044,428	21,756,331	(9,510,249)	(857,972)	43,750	8,422,627	870,253	(206,489)	9,086,391	20,518,251	69%
2028	0.00%	4.00%	-	-	209,595,064	970,611	21,488,862	(9,048,081)	(865,897)	43,750	8,383,803	859,554	(197,405)	9,045,952	20,664,587	66%
2029	0.00%	4.00%	-	-	208,707,775	887,289	21,551,876	(8,568,414)	(873,584)	43,750	8,348,311	862,075	(187,965)	9,022,421	21,176,048	63%
2030	0.00%	4.00%	-	-	207,914,480	793,295	21,969,344	(8,086,472)	(881,041)	43,750	8,316,579	878,774	(178,475)	9,016,878	22,062,458	59%
2031	0.00%	4.00%	-	-	196,198,013	11,716,467	33,778,925	(7,615,460)	(888,278)	43,750	7,847,921	1,351,157	(169,200)	9,029,878	34,348,815	56%
2032	0.00%	4.00%	-	-	183,955,253	12,242,760	46,591,576	(7,157,709)	(895,315)	43,750	7,358,210	1,863,663	(160,185)	9,061,688	47,643,989	52%
2033	0.00%	4.00%	-	-	171,222,144	12,733,109	60,377,098	(6,682,992)	(902,192)	43,750	6,848,886	2,415,084	(150,829)	9,113,141	61,948,805	49%
2038	0.00%	4.00%	-	-	93,393,893	15,565,650	159,235,436	(4,444,107)	(936,727)	-	5,603,634	6,369,417	(107,617)	11,865,434	165,720,036	34%
2043	0.00%	4.00%	-	-	15,565,643	15,565,650	272,814,429	(2,692,141)	(982,307)	-	933,939	10,912,577	(73,489)	11,773,027	280,913,008	21%
2048	0.00%	4.00%	-	-	-	333,685,855	(1,472,764)	(1,055,092)	-	-	13,347,434	(50,557)	13,296,877	344,454,876	12%	
2053	0.00%	4.00%	-	-	-	393,400,911	(793,604)	(1,163,535)	-	-	15,736,036	(39,143)	15,696,894	407,140,665	6%	
2058	0.00%	4.00%	-	-	-	468,449,475	(404,456)	(1,308,763)	-	-	18,737,979	(34,264)	18,703,715	485,439,971	3%	
2063	0.00%	4.00%	-	-	-	560,619,144	(189,212)	(1,491,350)	-	-	22,424,766	(33,611)	22,391,155	581,329,736	2%	
2068	0.00%	4.00%	-	-	-	672,609,878	(78,421)	(1,713,429)	-	-	26,904,395	(35,837)	26,868,558	697,686,586	1%	

# City of Detroit Police and Fire Retiree Health Care Trust

## Scenario 8 Alternate with 2% Annual Benefit Increases

### (4.0% Return with 55% Monetization)

MA PPO	MA HMO	Opt-Out HRA	Current Participants									Potential Future Participants			Group Description	
			Retiree HRA									Spouse HRA (Non-Med Elig)	Spouse Not Receiving	Actively Waived	No Enrollment Election	
			Below FPL	Income Level	Non-Med Duty Dis	Non-Med Elig	Over 65 Non-Med Elig	Over 65 Unsub	n/a	n/a	n/a					
\$ 90.00	\$ 90.00	\$ 85.00	\$ 145.58	\$ 170.00	\$ 395.00	\$ 120.00	\$ 295.00	\$ 85.00	\$ 120.00	n/a	n/a	n/a	n/a	n/a	Current Monthly Amount	
4,747	136	1,957	-	43	370	1,091	134	1	319	705	54	1,033	Number in Group 12/31/2017			
4,709	134	1,222	-	519	336	960	39	-	555	743	-	406	Number in Group 12/31/2018			
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Include Group			
\$ -	\$ -	\$ 120.00	\$ 145.58	\$ 170.00	\$ 395.00	\$ 120.00	\$ 295.00	\$ 120.00	\$ 120.00				Flat Dollar Monthly Lifetime Benefit (per person) Pre-65			
\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 295.00	\$ 120.00	\$ 120.00				Flat Dollar Monthly Lifetime Benefit (per person) Post-65			
100%	100%	100%	50%	50%	50%	50%	50%	50%	50%				Utilization Percentage Pre-65 (Applies to Flat Dollar Only)			
100%	100%	100%	100%	100%	100%	100%	100%	100%	100%				Utilization Percentage Post-65 (Applies to Flat Dollar Only)			
0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	Annual increase in Flat Dollar Benefit			
\$253,900,999 Original Face Value of Bonds at 12/10/2014			146,972,157 Present Value of Benefits 21,445,989 Present Value of Expenses 168,416,146 Total 148,169,886 Valuation Assets (Immediate Monetization)^ 20,248,260 Unfunded Actuarial Liability (UAL) 519,884 Present Value of Future Contributions 19,728,376 Asset Deficit/(Surplus)									Notes: * Excludes accrued interest receivable as it is already accounted for in the cash flow projection. # Bond coupon payment does not accrue additional interest during the year in which it is paid. ^ Valuation assets include monetized valuation of bond and indicated monetization rate plus cash and receivables.				
\$228,245,662 Face Value of Bond (A) at Val Date																
\$ 5,655,337 Face Value of Bond (B) at Val Date																
55% MV of Bond (used to calculate UAAL)																
\$19,524,337 Investable Assets*																
Never Year of Insolvency																
Never Year Monetization/Cash is Needed																
4.00% Average Yield																
Ad-Hoc																
Year	Ad-Hoc Prem. Increase	Investment Return	Optional Bond Sale	Optional % Of Face	Face Value of Bonds BoY	Principal Repayment	Jan 1. Assets*	Benefit Payments	Expenses	Grant / (Due City)	Bond Coupon	Invested Assets	Ben./Expen./Grant/ Bond#	Total	Dec. 31 Assets	% Remaining
2019	N/A	4.00%	\$ 20,000,000	86.50%	\$ 213,900,999	\$ -	\$ 36,824,337	\$ (8,680,535)	\$ (800,000)	\$ 43,750	\$ 8,956,040	\$ 1,472,973	\$ (188,736)	\$ 10,240,278	\$ 37,627,830	97%
2020	2.00%	4.00%	-	-	213,900,999	-	37,627,830	(10,870,009)	(796,598)	43,750	8,956,040	1,505,113	(232,457)	9,828,696	35,833,670	93%
2021	2.00%	4.00%	-	-	213,900,999	-	35,833,670	(10,758,211)	(805,963)	43,750	8,956,040	1,433,347	(230,408)	9,758,978	34,072,224	90%
2022	2.00%	4.00%	-	-	213,900,999	-	34,072,224	(10,619,715)	(815,128)	43,750	8,956,040	1,362,889	(227,822)	9,691,107	32,372,239	86%
2023	2.00%	4.00%	-	-	213,900,999	-	32,372,239	(10,465,953)	(824,099)	43,750	8,956,040	1,294,890	(224,926)	9,626,003	30,751,939	83%
2024	2.00%	4.00%	-	-	213,900,999	-	30,751,939	(10,284,336)	(832,876)	43,750	8,956,040	1,230,078	(221,469)	9,564,648	29,243,126	80%
2025	2.00%	4.00%	-	-	212,717,743	1,183,256	30,426,382	(10,094,224)	(841,452)	43,750	8,956,040	1,217,055	(217,839)	9,507,926	29,042,382	76%
2026	2.00%	4.00%	-	-	211,610,104	1,107,640	30,150,022	(9,871,505)	(849,821)	43,750	8,464,404	1,206,001	(213,552)	9,456,853	28,929,299	73%
2027	2.00%	4.00%	-	-	210,565,676	1,044,428	29,973,727	(9,627,338)	(857,972)	43,750	8,422,627	1,198,949	(208,831)	9,412,745	28,944,911	69%
2028	2.00%	4.00%	-	-	209,595,064	970,611	29,915,523	(9,381,833)	(865,897)	43,750	8,383,803	1,196,621	(204,080)	9,376,344	29,087,887	66%
2029	2.00%	4.00%	-	-	208,707,775	887,289	29,975,176	(9,117,856)	(873,584)	43,750	8,348,311	1,199,007	(198,954)	9,348,364	29,375,850	63%
2030	2.00%	4.00%	-	-	207,914,480	793,295	30,169,145	(8,837,033)	(881,041)	43,750	8,316,579	1,206,766	(193,486)	9,329,859	29,824,679	59%
2031	2.00%	4.00%	-	-	196,198,013	11,716,467	41,541,146	(8,538,211)	(888,278)	43,750	7,847,921	1,661,646	(187,655)	9,321,912	41,480,319	56%
2032	2.00%	4.00%	-	-	183,955,253	12,242,760	53,723,079	(8,227,774)	(895,315)	43,750	7,358,210	2,148,923	(181,587)	9,325,546	53,969,286	52%
2033	2.00%	4.00%	-	-	171,222,144	12,733,109	66,702,395	(7,878,053)	(902,192)	43,750	6,848,886	2,668,096	(174,730)	9,342,252	67,308,152	49%
2038	2.00%	4.00%	-	-	93,393,893	15,565,650	159,435,272	(5,951,704)	(936,727)	-	5,603,634	6,377,411	(137,769)	11,843,276	164,390,117	34%
2043	2.00%	4.00%	-	-	15,565,643	15,565,650	264,832,801	(4,086,575)	(982,307)	-	933,939	10,593,312	(101,378)	11,425,873	271,189,792	21%
2048	2.00%	4.00%	-	-	-	316,811,087	(2,574,350)	(1,055,092)	-	-	12,672,443	(72,589)	12,599,855	325,781,499	12%	
2053	2.00%	4.00%	-	-	-	367,548,407	(1,546,784)	(1,163,535)	-	-	14,701,936	(54,206)	14,647,730	379,485,817	6%	
2058	2.00%	4.00%	-	-	-	433,469,026	(874,623)	(1,308,763)	-	-	17,338,761	(43,668)	17,295,093	448,580,734	3%	
2063	2.00%	4.00%	-	-	-	515,936,014	(452,172)	(1,491,350)	-	-	20,637,441	(38,870)	20,598,570	534,591,061	2%	
2068	2.00%	4.00%	-	-	-	617,107,617	(206,936)	(1,713,429)	-	-	24,684,305	(38,407)	24,645,897	639,833,149	1%	

## APPENDIX

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### ALTERNATE SCENARIO

# City of Detroit Police and Fire Retiree Health Care Trust

## Alternate with 40% HRA Utilization

### (4.0% Return with 55% Monetization)

Current Participants												Potential Future Participants			Group Description	
MA PPO	MA HMO	Opt-Out HRA	Below FPL	Income Level	Non-Med Duty Dis	Non-Med Elig	Over 65 Non-Med Elig	Over 65 Unsub	Spouse HRA (Non-Med Elig)	Spouse Not Receiving	Actively Waived	No Enrollment Election				
\$ 90.00	\$ 90.00	\$ 85.00	\$ 145.58	\$ 170.00	\$ 395.00	\$ 120.00	\$ 295.00	\$ 85.00	\$ 120.00	n/a	n/a	n/a	n/a	Current Monthly Amount		
4,747	136	1,957	-	43	370	1,091	134	1	319	705	54	1,033	Number in Group 12/31/2017			
4,709	134	1,222	-	519	336	960	39	-	555	743	-	406	Number in Group 12/31/2018			
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	Include Group		
\$ -	\$ -	\$ 120.00	\$ 145.58	\$ 170.00	\$ 395.00	\$ 120.00	\$ 295.00	\$ 120.00	\$ 120.00					Flat Dollar Monthly Lifetime Benefit (per person) Pre-65		
\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00	\$ 120.00					Flat Dollar Monthly Lifetime Benefit (per person) Post-65		
100%	100%	100%	40%	40%	40%	40%	40%	40%	40%					Utilization Percentage Pre-65 (Applies to Flat Dollar Only)		
100%	100%	100%	100%	100%	100%	100%	100%	100%	100%					Utilization Percentage Post-65 (Applies to Flat Dollar Only)		
0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	Annual increase in Flat Dollar Benefit		
253,900,999 Original Face Value of Bond at 12/10/2014		118,681,148 Present Value of Benefits														
253,900,999 Face Value of Bond at Val Date		21,445,989 Present Value of Expenses														
55% MV of Bond (used to calculate UAAL)		140,127,137 Total														
1,934,269 Investable Assets*		148,169,886 Valuation Assets (Immediate Monetization)^														
Never Year of Insolvency		(8,042,749) Unfunded Actuarial Liability (UAL)														
Never Year Monetization/Cash is Needed		519,884 Present Value of Future Contributions														
4.00% Average Yield		(8,562,633) Asset Deficit/(Surplus)														
		106.1% Funded %														
Ad-Hoc																
Ad-Hoc Prem.		Investment	Optional Bond Sale	Optional % Of Face	Face Value of Bonds BoY	Principal Repayment	Jan 1. Assets*	Trust Benefit Payments		Grant / (Due City)	Interest					
Year	Increase	Return		%				Payments	Expenses		Bond Coupon	Invested Assets	Ben./ Expen./ Grant/ Bond#	Dec. 31 Total	% Contracts Remaining	
2019	N/A	4.00%	\$ 20,000,000	86.50%	\$ 213,900,999	\$ -	\$ 36,824,337	\$ (8,680,535)	\$ (800,000)	\$ 43,750	\$ 8,956,040	\$ 1,472,973	\$ (188,736)	\$ 10,240,278	\$ 37,627,830 97%	
2020	0.00%	4.00%	-	-	213,900,999	-	37,627,830	(10,227,039)	(796,598)	43,750	8,556,040	1,505,113	(219,598)	9,841,555	36,489,499 93%	
2021	0.00%	4.00%	-	-	213,900,999	-	36,489,499	(9,942,052)	(805,963)	43,750	8,556,040	1,459,580	(214,085)	9,801,535	35,586,768 90%	
2022	0.00%	4.00%	-	-	213,900,999	-	35,586,768	(9,637,226)	(815,128)	43,750	8,556,040	1,423,471	(208,172)	9,771,339	34,949,502 86%	
2023	0.00%	4.00%	-	-	213,900,999	-	34,949,502	(9,322,359)	(824,099)	43,750	8,556,040	1,397,980	(202,054)	9,751,966	34,598,759 83%	
2024	0.00%	4.00%	-	-	213,900,999	-	34,598,759	(8,992,675)	(832,876)	43,750	8,556,040	1,383,950	(195,636)	9,744,354	34,561,314 80%	
2025	0.00%	4.00%	-	-	212,717,743	1,183,256	35,744,570	(8,663,447)	(841,452)	43,750	8,508,710	1,429,783	(189,223)	9,749,270	36,032,690 76%	
2026	0.00%	4.00%	-	-	211,610,104	1,107,640	37,140,330	(8,315,412)	(849,821)	43,750	8,464,404	1,485,613	(182,430)	9,767,588	37,786,434 73%	
2027	0.00%	4.00%	-	-	210,565,676	1,044,428	38,830,862	(7,958,159)	(857,972)	43,750	8,422,627	1,553,235	(175,448)	9,800,414	39,858,895 69%	
2028	0.00%	4.00%	-	-	209,595,064	970,611	40,829,507	(7,610,742)	(865,897)	43,750	8,383,803	1,633,180	(168,658)	9,848,325	42,244,943 66%	
2029	0.00%	4.00%	-	-	208,707,775	887,289	43,132,232	(7,262,098)	(873,584)	43,750	8,348,311	1,725,289	(161,839)	9,911,762	44,952,061 63%	
2030	0.00%	4.00%	-	-	207,914,480	793,295	45,745,357	(6,911,465)	(881,041)	43,750	8,316,579	1,829,814	(154,975)	9,991,418	47,988,019 59%	
2031	0.00%	4.00%	-	-	196,198,013	11,716,467	59,704,486	(6,555,693)	(888,278)	43,750	7,847,921	2,388,179	(148,004)	10,088,096	62,392,361 56%	
2032	0.00%	4.00%	-	-	183,955,253	12,242,760	74,635,121	(6,200,863)	(895,315)	43,750	7,358,210	2,985,405	(141,049)	10,202,566	77,785,260 52%	
2033	0.00%	4.00%	-	-	171,222,144	12,733,109	90,518,368	(5,828,097)	(902,192)	43,750	6,848,886	3,620,735	(133,731)	10,335,890	94,167,719 49%	
2038	0.00%	4.00%	-	-	93,393,893	15,565,650	199,638,879	(4,013,697)	(936,727)	-	5,603,634	7,985,555	(99,008)	13,490,180	208,178,635 34%	
2043	0.00%	4.00%	-	-	15,565,643	15,565,650	323,758,199	(2,510,425)	(982,307)	-	939,939	12,950,328	(69,855)	13,814,412	334,079,878 21%	
2048	0.00%	4.00%	-	-	-	396,233,797	(1,445,025)	(1,055,092)	-	-	15,849,352	(50,002)	15,799,350	409,533,029 12%		
2053	0.00%	4.00%	-	-	-	469,596,111	(787,963)	(1,163,535)	-	-	18,783,844	(39,030)	18,744,814	486,389,427 6%		
2058	0.00%	4.00%	-	-	-	561,169,773	(403,946)	(1,308,763)	-	-	22,446,791	(34,254)	22,412,537	581,869,602 3%		
2063	0.00%	4.00%	-	-	-	673,428,865	(189,184)	(1,491,350)	-	-	26,937,155	(33,611)	26,903,544	698,651,874 2%		
2068	0.00%	4.00%	-	-	-	809,860,217	(78,420)	(1,713,429)	-	-	32,394,409	(35,837)	32,358,572	840,426,940 1%		