

# City of Detroit Police and Fire Retiree Health Care Trust

Actuarial Valuation Report  
as of December 31, 2019





October 29, 2020

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

**Re: VEBA Valuation/Benefit Modeling as of December 31, 2019**

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, 2019. The purpose of this actuarial valuation is to evaluate the financial status of the program as of December 31, 2019 and model the estimated solvency under benefit levels set by the Board for calendar years 2019 and 2020.

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 15% 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 the 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, 2019. No adjustments were made for activity occurring after December 31, 2019 in the measurement of the liabilities.



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.

Member data reported for this valuation (12/31/2019) was more consistent with the data reported for the 12/31/2017 valuation than the 12/31/2018 valuation, specifically with regard to the number of opt out participants. Please see the comments for further details.

This report was prepared using our proprietary valuation model and related software which in our professional judgment has the capability to provide results that are consistent with the purposes of the valuation. We performed tests to ensure that the model reasonably represents that which is intended to be modeled. We are relying on the GRS actuaries and Internal Software, Training, and Processes Team who developed and maintain the model.

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.

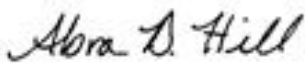
The signing individuals are independent of the plan sponsor.

This report replaces our draft report, dated July 14, 2020 and includes 2021 benefit levels set at the September 2020 Board meeting.

Respectfully submitted,



Kenneth G. Alberts



Abra D. Hill, ASA, EA, MAAA

KGA/ADH:dj

C3419



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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 benefit levels payable for 2020 and 2021 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, 2019, there were 9,493 reported eligible participants. Of those, 8,650 were reported to have opted to actively participate. Of the 8,650 participants actively participating, 4,564 participants are receiving coverage under a Medicare Advantage plan and 1,744 are covered by the HRA benefit. During 2019, approximately 44% 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).

### Sensitivity Testing and Preliminary Results

We presented the preliminary results of the 2018 valuation 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 were shown in our 2018 report and have been updated to reflect the 2019 valuation results. At that time, the Board also 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.

Similarly, we presented the preliminary results of this valuation to the Board at the July 2020 Board meeting based on the 2020 benefit levels. Subsequent to that meeting the Board adopted a change in benefit levels, effective January 1, 2021. The new benefit levels increased benefits for all members by \$5 per month. The 2020 and 2021 benefit levels are shown on page B-1 for all membership categories.



## SECTION B

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



## Retired Member Summary as of December 31, 2019

Benefit Type	Monthly Benefit Paid by the Trust		Age Range			Total Lives	Total Lives	Total Lives
			Under 26	Pre 65	Post 65			
	2020	2021				2019	2018	2017
Medicare Advantage PPO								
Single	\$ 120.00	\$ 125.00	-	42	4,385	4,427	4,575	4,747
Medicare Advantage HMO						-		
Single	\$ 120.00	\$ 125.00	-	2	135	137	134	136
Total MA Participants <sup>#</sup>			-	44	4,520	4,564	4,709	4,883
Opt-Out of MA	\$ 120.00	\$ 125.00	-	54	2,288	2,342	1,222	1,957
Retiree HRA						-		
Income Level and Purchased on State Exchange	\$ 170.00	\$ 175.00	-	33	-	33	519	43
Non Medicare Eligible Duty Disabled Police and Fire	\$ 395.00	\$ 400.00	1	326	3	330	329	370
Non Medicare Eligible Stipend	\$ 120.00	\$ 125.00	3	808	10	821	960	1,091
Over Age 65 Non Medicare Eligible	\$ 295.00	\$ 300.00	-	-	62	62	39	134
Spouse HRA						-		
Non Medicare Eligible Spouse	\$ 120.00	\$ 125.00	-	496	2	498	555	319
Total HRA Members (No Opt-Out)			4	1,663	77	1,744	2,402	1,958
						-		
Total Current Participants			4	1,761	6,885	8,650	8,333	8,798
Total Potential Participants								
Spouse Not Receiving	\$ -	\$ -	-	143	282	425	743	705
Employees Waiving, no MA, no HRA	\$ -	\$ -	-	122	296	418	406	54
Participants - No Enrollment Election	\$ -	\$ -	-	-	-	-	-	1,033
May Be Added	\$ -	\$ -	-	-	-	-	-	-
Special Open Enrollment	\$ -	\$ -	-	-	-	-	-	-
Total Potential Participants			-	265	578	843	1,149	1,792
Grand Total			4	2,026	7,463	9,493	9,482	10,590

<sup>#</sup> If premiums are less than \$120 in 2020 or \$125 in 2021, the difference between the \$120 or \$125 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 and \$125 in 2021) or the Opt-Out HRA (\$120 in 2020 and \$125 in 2021) upon reaching age 65.



## Retired Member Age Summary as of December 31, 2019

Age	MA PPO	MA HMO	Opt-Out HRA	Retiree HRA				Spouse HRA Non-Med Elig
				Income Level	Non-Med Duty Dis	Non-Med Elig	Over 65 Non-Med Elig	
Under 30	-	-	-	-	1	3	-	1
30 - 34	-	-	-	-	-	-	-	1
35 - 39	-	-	-	-	20	3	-	3
40 - 44	1	-	-	-	49	8	-	25
45 - 49	1	-	2	-	79	19	-	47
50 - 54	5	-	6	5	71	134	-	97
55 - 59	9	1	11	7	62	250	-	119
60 - 64	26	1	35	21	45	394	-	203
65 - 69	540	42	1,081	-	3	9	17	-
70 - 74	1,440	40	707	-	-	-	22	1
75 - 79	1,047	27	260	-	-	-	13	-
80 - 84	578	10	117	-	-	-	2	-
85 - 89	401	7	55	-	-	1	5	-
90 - 94	299	5	52	-	-	-	2	1
95 and Over	80	4	16	-	-	-	1	-
<b>TOTAL</b>	<b>4,427</b>	<b>137</b>	<b>2,342</b>	<b>33</b>	<b>330</b>	<b>821</b>	<b>62</b>	<b>498</b>

## SECTION C

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### VALUATION RESULTS AND BASELINE BENEFIT MODEL

# Summary of Results

## Principal Valuation Results

Valuation Date:	December 31, 2019	
A) Assets		
1) Face Value of Bonds at Valuation Date	\$ 198,900,999	\$ 198,900,999
2) Monetization Percentage	<b>55%</b>	<b>80%</b>
3) Estimated Bond Market Value	\$ 109,395,549	\$ 159,120,799
4) Net Additional Assets	51,473,953	51,473,953
5) Estimated Market Value of Assets	\$ 160,869,502	\$ 210,594,752
B) Present Value of Future Contributions	\$ 496,063	\$ 496,063
C) Present Value of Future		
1) Benefits	\$ 118,029,998	\$ 118,029,998
2) Expenses	21,598,766	21,598,766
3) Total Liability	\$ 139,628,764	\$ 139,628,764
D) Asset Surplus/(Deficit) [A.5+B-C.3]	\$ 21,736,801	\$ 71,462,051
E) Funded Ratio [(A.5+B)/C.3]	115.6%	151.2%

## Recognized Rate of Return

Additions	Based on Monitization		
	55%	80%	100%
Investment Income:			
Interest and Dividends	\$ 9,644,142	\$ 9,644,142	\$ 9,644,142
Net Increase in Fair Value of Investments	12,223,798	3,473,798	(3,526,202)
Investment Related Expenses	(50,799)	(50,799)	(50,799)
Net Investment Income	\$ 21,817,141	\$ 13,067,141	\$ 6,067,141
Contributions - Foundation for Detroit's Future	43,750	43,750	43,750
Total Additions	\$ 21,860,891	\$ 13,110,891	\$ 6,110,891
Deductions			
Premium Payments - Net of Retiree Contributions	\$ 5,131,337	\$ 5,131,337	\$ 5,131,337
Health Reimbursement Account Reimbursements	3,349,532	3,349,532	\$ 3,349,532
Administrative Expenses	817,735	817,735	\$ 817,735
Total Deductions	\$ 9,298,604	\$ 9,298,604	\$ 9,298,604
Net Increase in Fiduciary Net Position	\$ 12,562,287	\$ 3,812,287	\$ (3,187,713)
Net Position - Beginning of Year*	150,497,317	208,972,567	255,752,767
Net Position - End of Year	\$ 163,059,604	\$ 212,784,854	\$ 252,565,054
Rate of Return	\$ - 14.99%	\$ - 6.42%	\$ - 2.44%

\* BOY net position for different monetization scenarios are based on unaudited assets.

# 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, 2019.

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, 2019, 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, 2019, 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

As of December 31, 2019, the present value of all future obligations (PVFO) at that date is \$139.6 million. Plan assets as of December 31, 2019, based on a 55% monetization of Trust assets, are \$161.4 million (including the present value of future contributions).

The difference between the market value of assets of \$161.4 million and PVFO of \$139.6 million represents a Plan surplus of \$21.7 million. The Plan is 115.6% funded after consideration of \$496,063 (present value) in future scheduled contributions.

Based on an 80% monetization, the fund is 151.2% funded. In January 2018, May 2019, and October 2019 the fund monetized \$20 million, \$20 million, and \$15 million in bonds, respectively, at a monetization rate above 80%, suggesting this measure may be more reflective of the current market. Page D-1 shows the historical monetization. A funded percent of over 100% 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.

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 and/or the need to adjust benefits.

## 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 or December 31, 2019 valuation data. However, any records with spouses were assumed to be part of that group and we have estimated that this group had 743 participants as of December 31, 2018 and has 425 participants as of December 31, 2019. Future obligations for the potential participants have not been included in the valuation. If they were included, liabilities would increase between \$3.7 million and \$7.3 million, using a 50% and 100% participation assumption, respectively (and a 100% utilization assumption for the portion of this group assumed to participate).

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.

2020	\$ 10,120,757
2021	9,580,258
2022	9,305,406
2023	9,013,889
2024	8,708,051
2025	8,401,321
2026	8,076,544
2027	7,738,042
2028	7,412,114
2029	7,084,187
2030	6,755,143

## Discussion (Continued)

### Utilization

Experience during 2019 shows that members electing HRA benefits are utilizing approximately 40% of their annual benefits, on average. The current Board adopted utilization assumptions are shown below:

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 <sup>^</sup>	Estimated HRA Benefits <sup>*</sup>	Census	HRA Count <sup>*</sup>	Utilization	
\$ 6,910,200	\$ 3,349,532	12/31/2019	3,859	49%	
\$ 6,279,270	\$ 2,558,583	12/31/2018	3,773	41%	
\$ 6,456,213	\$ 2,586,264	12/31/2017	3,670	40%	

<sup>^</sup> Expected HRA represents the sums of the mid-point between the BOY and EOY valuation number counts for each HRA benefit type multiplied by the maximum HRA amount for that benefit type.

<sup>\*</sup> Estimated by averaging BOY and EOY census counts.

Data for end of 2015/beginning 2016 (the first year of the plan) was not detailed enough or precise enough to include either 2015 or 2016 in the chart above.



## Discussion (Continued)

### Asset Data

In the past, we have received unaudited asset information to perform the valuations. This year, we also received the audited financial report which contained different values. Where information was contained in both sources, we relied on the audited financial report, to the extent that the sources differed.

### Member Data

For the 12/31/2018 valuation, the number of members receiving an opt out benefit appeared to be low and number receiving an income level benefit appeared to be high, when compared to the number reported for the 12/31/2017 valuation (1,222 opt outs and 519 income levels in 2018 compared with 1,957 opt outs and 43 income levels in 2017). This year, the reported opt outs and income levels were more consistent with the 2017 numbers than the 2018 numbers (2,342 opt outs and 33 income levels were reported for 2019). Overall, there were 9,493 total current and potential participants reported for the 2019 valuation. When comparing to the 10,590 total current and potential participants reported in 2017, this represents approximately a 5% average annual decrease in population. Since this is a closed group, we would expect an annual decline of membership in the 2% to 4% range, based on our current mortality assumption. The actual average annual decline of approximately 5% is much closer to expectations than last year's decline of 10% (total report population was relatively flat between 2018 and 2019). We will continue to monitor the reported population and may, from time to time, adjust assumptions to account for any potential reporting inconsistencies.

### Assumptions

The Board adopted assumptions for the 12/31/2019 valuation are the same as adopted for the 12/31/2018 valuation. However, in the 12/31/2018 valuation, the utilization assumption used for the pre-65 opt-out HRAs (the group that appeared to be under reported) was 100%. Since the reported count for this group has returned to previous levels, we have returned the utilization assumption for this group to 50%. The aggregate effect of increasing the reported population for this group and lowering the utilization back to 50% was mostly offsetting.

We believe the assumptions currently in use for the valuation, as adopted by the Board, are reasonable based on general market condition. Note, we have not evaluated the specific default risk associated with any specific investment (including the City of Detroit Bonds). Please see comments on Future Outlook regarding such risks.

The Police and Fire Retirement System is scheduled to have an experience study performed following the June 30, 2020 valuation (likely in the spring/summer of 2021). We recommend reviewing the mortality assumption with the draft VEBA valuation report that follows that study (likely the December 31, 2021 valuation).

# Discussion (Concluded)

## Experience

Experience during the year was more favorable than assumed, in aggregate. The primary source of favorable experience was recognized investment return. Given the uncertainty surrounding 2020 (see future outlook comment) this experience and the resulting funded status in excess of 100% can be used as a risk reserve in the event of unfavorable experience during 2020.

## Recommendation

We recommend that the administrator separately tract the HRA benefit payments for Non-Medicare Advantage members and Medicare Advantage members. This will enable us to develop a more precise utilization assumption in future valuations once sufficient Medicare Advantage HRA experience emerges.

## Future Outlook

After the valuation date, the COVID-19 pandemic began. While the direct and indirect effects of the pandemic as well as the stay at home orders issued by governments around the world are not yet fully known (and may not be fully known for years) we have the following observations:

- The Detroit area was hit hard by the pandemic and will likely continue to see direct and indirect effects from the pandemic greater (and longer) than that of its peer communities;
- It is likely that the mortality rates will be greater than assumed over the next year or two and possible that mortality rates will be less than assumed in subsequent years as a result of COVID-19. This may make short-term projections of rates of mortality more difficult to model;
- It is possible that the 4% assumed rate of return will not be realized during 2020;
- It is possible that the lost revenue to the City due to the shutdown could affect the short-term and/or long-term value of the remaining bonds and the City's ability to make the interest payment on those bonds (default risk); and
- In response to the pandemic, the U.S. Congress has expanded the items that are HRA reimbursable. It is, therefore, possible that this will result in higher HRA utilization than assumed during 2020 and beyond.

We recommend the Board consider all these possible affects while deciding on next year's benefit levels. Please let us know if the Board would like us to run any specific projections (in addition to the sensitivity projections included in Section F to assist in this decision).

# Solvency Projection Assumptions

## Baseline

### Solvency Projection Assumptions

\$253,900,999	Original Face Value of Bond
\$198,900,999	Face Value of Bond as of Valuation Date
\$51,555,188	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)
\$870,000	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 2020 benefit payments are based on the 2020 benefit levels set by the Board. The 2021 and beyond benefit payments are based on the 2021 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.
- 6) Monetization was assumed to be 55%.
- 7) Investment return was assumed to be 4.0%.
- 8) Members receiving HRA benefit were assumed to utilize 50% of available benefits prior to age 65 and 100% of benefits at and after age 65.

# City of Detroit Police and Fire Retiree Health Care Trust

## Baseline

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					
\$ 120.00	\$ 120.00	\$ 120.00	\$ 145.58	\$ 170.00	\$ 395.00	\$ 120.00	\$ 295.00	\$ 120.00	\$ 120.00	n/a	n/a	n/a	Current Monthly Amount
4,709	134	1,222	-	519	336	960	39	-	555	743	-	406	Number in Group 12/31/2018
4,427	137	2,342	-	33	330	821	62	-	498	425	-	418	Number in Group 12/31/2019
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Include Group
\$ -	\$ -	\$ 125.00	\$ 150.58	\$ 175.00	\$ 400.00	\$ 125.00	\$ 300.00	\$ 125.00	\$ 125.00				Flat Dollar Monthly Lifetime Benefit (per person) Pre-65
\$ 125.00	\$ 125.00	\$ 125.00	\$ 125.00	\$ 125.00	\$ 125.00	\$ 125.00	\$ 300.00	\$ 125.00	\$ 125.00				Flat Dollar Monthly Lifetime Benefit (per person) Post-65
100%	100%	50%	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
\$193,245,662	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)
\$51,555,188	Investable Assets*
Never	Year of Insolvency
Never	Year Monetization/Cash is Needed
4.00%	Average Yield

118,029,998	Present Value of Benefits
21,598,766	Present Value of Expenses
139,628,764	Total
160,950,737	Valuation Assets (Immediate Monetization)^
(21,321,973)	Unfunded Actuarial Accrued Liability (UAAL)
496,063	Present Value of Future Contributions
(21,818,036)	Asset Deficit/(Surplus)
115.6%	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		Optional Bond Sale	Optional % Of Face	Face Value of Bonds BoY	Principal Repayment	Jan 1. Assets*	Trust		Grant / (Due City)	Interest			Dec. 31 Assets	% Contracts Remaining
	Ad-Hoc Prem. Increase	Investment Return						Benefit Payments	Expenses		Bond Coupon	Invested Assets	Ben./ Expen./ Grant/ Bond#		
2020	N/A	4.00%	\$ -	0.00%	\$198,900,999	\$ -	\$ 51,555,188	\$ (10,120,757)	\$ (872,256)	\$ 43,750	\$ 7,956,040	\$ 2,062,208	\$ (218,985)	\$ 9,799,262	\$ 50,405,187 98%
2021	0.00%	4.00%	-	-	198,900,999	-	50,405,187	(10,234,736)	(880,402)	43,750	7,956,040	2,016,207	(221,428)	9,750,820	49,084,619 95%
2022	0.00%	4.00%	-	-	198,900,999	-	49,084,619	(9,922,821)	(888,117)	43,750	7,956,040	1,963,385	(215,344)	9,704,081	48,021,512 91%
2023	0.00%	4.00%	-	-	198,900,999	-	48,021,512	(9,600,040)	(895,394)	43,750	7,956,040	1,920,860	(209,034)	9,667,867	47,237,695 88%
2024	0.00%	4.00%	-	-	198,900,999	-	47,237,695	(9,261,535)	(902,218)	43,750	7,956,040	1,889,508	(202,400)	9,643,148	46,760,840 84%
2025	0.00%	4.00%	-	-	197,802,973	1,098,026	47,858,865	(8,923,663)	(908,572)	43,750	7,912,119	1,914,355	(195,770)	9,630,704	47,701,084 81%
2026	0.00%	4.00%	-	-	196,775,118	1,027,856	48,728,940	(8,568,169)	(914,432)	43,750	7,871,005	1,949,158	(188,777)	9,631,385	48,921,474 77%
2027	0.00%	4.00%	-	-	195,805,920	969,198	49,890,672	(8,201,388)	(919,774)	43,750	7,832,237	1,995,627	(181,548)	9,646,315	50,459,575 74%
2028	0.00%	4.00%	-	-	194,905,222	900,698	51,360,273	(7,846,983)	(924,574)	43,750	7,796,209	2,054,411	(174,556)	9,676,064	52,308,530 70%
2029	0.00%	4.00%	-	-	194,081,845	823,377	53,131,907	(7,488,286)	(928,816)	43,750	7,763,274	2,125,276	(167,467)	9,721,083	54,479,638 67%
2030	0.00%	4.00%	-	-	193,345,691	736,154	55,215,792	(7,128,688)	(932,489)	43,750	7,733,828	2,208,632	(160,349)	9,782,111	56,980,475 63%
2031	0.00%	4.00%	-	-	182,473,165	10,872,526	67,853,002	(6,763,657)	(935,598)	43,750	7,298,927	2,714,120	(153,110)	9,859,937	70,057,433 60%
2032	0.00%	4.00%	-	-	171,082,180	11,390,984	81,448,418	(6,402,304)	(938,161)	43,750	6,843,287	3,257,937	(145,934)	9,955,290	84,106,992 56%
2033	0.00%	4.00%	-	-	159,234,801	11,847,379	95,954,371	(6,022,159)	(940,217)	43,750	6,369,392	3,838,175	(138,373)	10,069,194	99,104,939 53%
2034	0.00%	4.00%	-	-	144,758,909	14,475,892	113,580,831	(5,641,487)	(941,826)	43,750	5,790,356	4,543,233	(130,791)	10,202,798	117,244,066 49%
2039	0.00%	4.00%	-	-	72,379,451	14,475,892	218,843,766	(3,830,870)	(946,914)	-	4,342,767	8,753,751	(95,556)	13,000,962	227,066,944 33%
2044	0.00%	4.00%	-	-	-	14,475,885	335,992,564	(2,379,172)	(962,009)	-	-	13,439,703	(66,824)	13,372,879	346,024,261 20%
2049	0.00%	4.00%	-	-	-	-	392,597,090	(1,371,043)	(1,008,185)	-	-	15,703,884	(47,585)	15,656,299	405,874,160 11%
2054	0.00%	4.00%	-	-	-	-	465,796,378	(749,464)	(1,095,072)	-	-	18,631,855	(36,891)	18,594,964	482,546,806 6%
2059	0.00%	4.00%	-	-	-	-	557,139,662	(380,608)	(1,221,774)	-	-	22,285,586	(32,048)	22,253,539	577,790,819 3%
2064	0.00%	4.00%	-	-	-	-	669,153,647	(174,287)	(1,386,475)	-	-	26,766,146	(31,215)	26,734,931	694,327,816 1%
2069	0.00%	4.00%	-	-	-	-	805,345,987	(69,563)	(1,589,830)	-	-	32,213,839	(33,188)	32,180,652	835,867,245 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 \$198,900,999 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	Type of Bond Sold
01/24/2018	\$20,000,000	81.05875%	Series A
05/31/2019	\$20,000,000	86.50000%	Series A
10/22/2019	\$15,000,000	87.37500%	Series A

## Reported Revenues and Expenditures (From Audited Assets)

<b>Additions</b>	<b>Market Value</b>
Investment Income:	
Interest and Dividends	\$ 9,644,142
Net Increase in Fair Value of Investments	6,541,502
Investment Related Expenses	(50,799)
Net Investment Income	\$ 16,134,845
Contributions - Foundation for Detroit's Future	43,750
Total Additions	\$ 16,178,595
 <b>Deductions</b>	
Premium Payments - Net of Retiree Contributions	\$ 5,131,337
Health Reimbursement Account Reimbursements	3,349,532
Administrative Expenses	817,735
Total Deductions	\$ 9,298,604
 Net Increase in Fiduciary Net Position	 \$ 6,879,991
Net Position - Beginning of Year	223,984,964
Net Position - End of Year	<u>\$ 230,864,955</u>
 Rate of Return	 7.38%

# Reported Plan Assets (at Market Value)

## December 31, 2019

### (From Audited Assets)

#### Balance Sheet

12/31/2019

#### ASSETS

##### Current Assets:

Cash and cash equivalents	\$	23,972,957
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Total Current Assets	\$	23,972,957
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##### Investments:

Equities	\$	11,463,578
----------	----	------------

Fixed income	\$	17,538,329
--------------	----	------------

City of Detroit Bonds Financial Recovery Bonds	\$	177,200,900
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Investment at Cost	\$	206,202,807
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Investment Market Value	\$	206,202,807
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##### Other Assets:

Accrued investment income receivable	\$	2,108,867
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Other receivables	\$	37,130
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Prepaid Expenses	\$	44,105
------------------	----	--------

Total Other Assets	\$	2,190,102
--------------------	----	-----------

Total Assets	\$	232,365,866
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#### LIABILITIES

##### Current Liabilities:

Accounts Payable	\$	1,178,778
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Due to City of Detroit General Retiree Health Care Trust	\$	322,133
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Total Current Liabilities	\$	1,500,911
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Total Liabilities	\$	1,500,911
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Net Fund Balance	\$	230,864,955
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Total Liab & Fund Balance	\$	232,365,866
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# Reported Revenues and Expenditures

## December 31, 2019

### (From Unaudited Assets)

	2019
Revenue:	
Health Insurance Prem-AETNA	\$ -
Health Insurance Premium-Priority	22,023
Dental Premiums	2,586,921
Vision Premiums	640,342
Foundation Grant	43,750
Dividends	197,367
Interest Income	10,158,442
Realized Gain(Loss) on Inv	15,708,880
Unrealized Gain(Loss) on Inv	(9,167,378)
Total Fund Revenue	\$ 20,190,347
Claim Expenses:	
Health Insurance Exp - AETNA	\$ 4,797,537
Health Insurance Exp - Priority	175,694
Health Insurance Exp - BCBS	-
Dental Expense	2,738,920
Vision Expense	672,165
HRA Claims Expense	3,134,306
Claims Refunds	(3,693)
Total Claims Expense	\$ 11,514,929
Administrative Expenses:	
Actuarial Fees	\$ 42,000
Administration Fees	511,135
Audit, Accounting Fees	19,950
Bank Fees	13,006
Custodial Fees	26,256
Interest Expense	-
Investment Manager Fees	24,543
Legal Fees	73,936
Liability insurance Prem Exp	48,114
Misc Expense (including Telephone/Mailing/Meeting/Postage/Document Storage)	18,659
Office Supplies	-
Other Professional Fees	5,891
Printing Expense	37,956
Trustee Expense	3,770
Trustee Lost Wages	22,088
Trustee Stipends	21,230
Total Administrative Expense	868,534
Total Expense	\$ 12,383,463
Net Surplus or Deficit	\$ 7,806,884

# Reported Plan Assets (at Market Value)

## December 31, 2019

### (From Unaudited Assets)

#### Balance Sheet

12/31/2019

#### ASSETS

##### Current Assets:

Fifth Third Administrative	\$ 961,353
Fifth Third Benefit	\$ (77,437)
Expense Account HNB #1745	\$ 42,456
Benefit Account HNB #1723	\$ 484

Total Current Assets	\$ 926,856
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##### Investments:

Fifth-Third Trust (Detroit Bonds)	\$ 198,465,867
Fifth-Third Cash & Equivalents	\$ -
Morgan Stanley #0113	\$ 13,100,717
Morgan Stanley #1113	\$ 17,802,181

Investment at Cost	\$ 229,368,765
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Investment Market Value	\$ 229,368,765
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##### Other Assets:

Accrued Interest Receivable	\$ 2,700,677
Accounts Receivable	\$ 37,130
Prepaid Expenses	\$ 44,105
Deposits	\$ -
Misc. Clearing	\$ 695

Total Other Assets	\$ 2,782,607
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Total Assets	\$ 233,078,228
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#### LIABILITIES

##### Current Liabilities:

Accounts Payable	\$ 372,322
Advance Contributions	\$ 297,436
Misc. Clearing	\$ -

Total Current Liabilities	\$ 669,758
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Total Liabilities	\$ 669,758
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Fund Balance	\$ 224,601,586
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Net Fund Increase (Decrease)	\$ 7,806,884
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Net Fund Balance	\$ 232,408,470
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Total Liab & Fund Balance	\$ 233,078,228
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## Development of Investable Assets (at Market Value) December 31, 2019

The beginning of year amount of investable assets was not clear. For projection purposes, the 1/1/2020 assets are estimated and to be as follows:

\$ 23,972,957	Cash and cash equivalents
11,463,578	Investments
17,538,329	Fixed Income
<u>(1,500,911)</u>	Liabilities
\$ 51,473,953	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
2019*	\$ 868,534

\* From 2019 Financial Report (audited Asset data).

## Revised Mandatory Bond Redemption Schedule

Series 2014(A)					12/31/2018	
Mandatory Redemption Date (Apr 1)	Redemption Requirements			Remaining Face BOY		PF Mandatory Monetization
	Outstanding Prior to Tender/Purchase	Reduced	Remaining/ Outstanding			
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	

Series 2014(B)					12/31/2018	
Mandatory Redemption Date (Apr 1)	Redemption Requirements			Remaining Face BOY		PF Mandatory Monetization
	Outstanding Prior to Tender/Purchase	Reduced	Remaining/ Outstanding			
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 “MedicalPlan” information, it was assumed that the “MedicalPlan” information superseded the HRA information.

## Data Processing

Raw data included a field “MedicalPlan” which was used to assign members into MA PPO, MA HMO, MA Opt-Out, or HRA. Spouses were assigned benefits first using the “ClassCodeDescription” information to see if they were included under the retiree’s MA benefit then using the HRA benefit if they were not. Since the raw data included a separate HRA benefit this year for the retiree and spouse, the members indicated as having an HRA were assigned into benefit groups using the retiree HRA benefits, and spouses without a MA benefit were assigned to benefit groups using their HRA benefit. For spouses receiving an HRA benefit which they should not be eligible, they were assigned a \$120 spouse benefit.

Members were compared to last year’s data and - after receiving approval from the Trust - compared to the pension systems’ data for consistency and to provide any missing spouse data. Any inconsistencies or further missing data were clarified by the Trust. After the initial data processing is completed, the summary of the data (shown on page B-1 of this report) is drafted and shared with the Board. Any unexpected results are highlighted and the Board is requested to let us know if any additional research or processing is needed before proceeding with the valuation. This year, the Board did not request any additional research/processing.

**Valuation Method:** Present Value of Future Benefits compared to current valuation 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 modeled under the terms of the bond.

**Valuation Assets:** Market value of investible assets plus Board adopted monetization of remaining City bonds plus present value of future Grant Money (contributions).

# 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 (\$511,135 in 2019 according to the unaudited assets) are assumed to increase by 3.0% per year pro-rated by the number of remaining participants. All other expenses (\$357,399 in Fiscal Year 2019 according to the unaudited assets) 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 \$870,000 in 2020.

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.

**HRA Utilization Assumptions:** Observed rates of HRA utilization, professional judgement, and a margin for conservatism.

**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^

	(Baseline) Current Valuation Assumptions 1	4% Return, 80% of Bond Value 2	5% Return, 55% of Bond Value 3	5% Return, 80% of Bond Value 4	3% Return, 55% of Bond Value 5	3% Return, 80% of Bond Value 6	Alternate - Current with 100% Utilization 7	Alternate - Current with 2% Benefit Increases 8
Assumed Investment Return	4.00%	4.00%	5.00%	5.00%	3.00%	3.00%	4.00%	4.00%
Monetization	55.00%	80.00%	55.00%	80.00%	55.00%	80.00%	55.00%	55.00%
A) Assets								
1) Bond Value	\$198.9	\$198.9	\$198.9	\$198.9	\$198.9	\$198.9	\$198.9	\$198.9
2) Monetization	55%	80%	55%	80%	55%	80%	55%	55%
3) Market value of Bond	\$109.4	\$159.1	\$109.4	\$159.1	\$109.4	\$159.1	\$109.4	\$109.4
4) Investable Assets	\$51.6	\$51.6	\$51.6	\$51.6	\$51.6	\$51.6	\$51.6	\$51.6
5) Assets	\$161.0	\$210.7	\$161.0	\$210.7	\$161.0	\$210.7	\$161.0	\$161.0
B) Present Value of Future Contributions	\$0.5	\$0.5	\$0.5	\$0.5	\$0.5	\$0.5	\$0.5	\$0.5
C) Actuarial Results								
1) Liabilities - Present Value of Benefits	118.0	118.0	108.5	108.5	129.2	129.2	146.2	141.6
2) Liabilities - PV of Future Expenses	21.6	21.6	18.2	18.2	26.2	26.2	21.6	21.6
3) Present Value of Benefits/Expenses	\$139.6	\$139.6	\$126.7	\$126.7	\$155.4	\$155.4	\$167.8	\$163.2
D) Asset Surplus/(Deficit) [A.5+B-C.3]	\$21.82	\$71.5	\$34.7	\$84.5	\$6.08	\$55.8	\$(6.32)	\$(1.78)
E) Funded Ratio [(A.5+B)/C.3]	115.6%	151.2%	127.4%	166.7%	103.9%	135.9%	96.2%	98.9%
F) Projected Insolvency Date <sup>#</sup>	Never	Never	Never	Never	Never	Never	Never	Never
Increase/(Decrease) in								
G) Surplus/(Deficit)	\$0.0	\$49.7	\$12.9	\$62.65	\$(15.74)	\$33.99	\$(28.14)	\$(23.60)
H) Funded Ratio	0.0%	35.6%	11.8%	51.1%	(11.7)%	20.3%	(19.4)%	(16.7)%

<sup>#</sup> Assuming bonds held to maturity.

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



## Sensitivity Testing Results History

Valuation Date	Historical Funded Ratios Under Different Scenarios							Alternate - Current with 2% Benefit Increases
	(Baseline)						Alternate -	
	Current	4% Return,	5% Return,	5% Return,	3% Return,	3% Return,	Current with	
	Valuation	80% of Bond	55% of Bond	80% of Bond	55% of Bond	80% of Bond	100%	
	Assumptions	Value	Value	Value	Value	Value	Utilization	
1	2	3	4	5	6	7	8	
12/31/2016	92.0%	132.1%	108.9%	156.3%	74.2%	106.5%	82.4%	81.8%
12/31/2017	103.1%	148.4%	114.9%	165.3%	91.5%	131.6%	94.6%	89.8%
12/31/2018 <sup>(b)</sup>	103.6%	144.4%	114.5%	159.6%	92.9%	129.4%	92.8%	88.3%
12/31/2019 <sup>(a)</sup>	115.6%	151.2%	127.4%	166.7%	103.9%	135.9%	96.2%	98.9%

(a) After changes in actuarial assumptions or methods.

(b) After changes in benefit provisions.

# City of Detroit Police and Fire Retiree Health Care Trust

## Scenario 1 Baseline (4.0% Return with 55% 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					
\$ 120.00	\$ 120.00	\$ 120.00	\$ 145.58	\$ 170.00	\$ 395.00	\$ 120.00	\$ 295.00	\$ 120.00	\$ 120.00	n/a	n/a	n/a	Current Monthly Amount
4,709	134	1,222	-	519	336	960	39	-	555	743	-	406	Number in Group 12/31/2018
4,427	137	2,342	-	33	330	821	62	-	498	425	-	418	Number in Group 12/31/2019
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Include Group
\$ -	\$ -	\$ 125.00	\$ 150.58	\$ 175.00	\$ 400.00	\$ 125.00	\$ 300.00	\$ 125.00	\$ 125.00				Flat Dollar Monthly Lifetime Benefit (per person) Pre-65
\$ 125.00	\$ 125.00	\$ 125.00	\$ 125.00	\$ 125.00	\$ 125.00	\$ 125.00	\$ 300.00	\$ 125.00	\$ 125.00				Flat Dollar Monthly Lifetime Benefit (per person) Post-65
100%	100%	50%	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
\$193,245,662	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)
\$51,555,188	Investable Assets*
Never	Year of Insolvency
Never	Year Monetization/Cash is Needed
4.00%	Average Yield

118,029,998	Present Value of Benefits
21,598,766	Present Value of Expenses
139,628,764	Total
160,950,737	Valuation Assets (Immediate Monetization)^
(21,321,973)	Unfunded Actuarial Accrued Liability (UAAL)
496,063	Present Value of Future Contributions
(21,818,036)	Asset Deficit/(Surplus)
115.6%	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		Optional Bond Sale	Optional % Of Face	Face Value of Bonds BoY	Principal Repayment	Jan 1. Assets*	Trust		Grant / (Due City)	Interest			Dec. 31 Assets	% Contracts Remaining
	Ad-Hoc Prem. Increase	Investment Return						Benefit Payments	Expenses		Bond Coupon	Invested Assets	Ben./ Expen./ Grant/ Bond#		
2020	N/A	4.00%	\$ -	0.00%	\$198,900,999	\$ -	\$ 51,555,188	\$ (10,120,757)	\$ (872,256)	\$ 43,750	\$ 7,956,040	\$ 2,062,208	\$ (218,985)	\$ 9,799,262	98%
2021	0.00%	4.00%	-	-	198,900,999	-	50,405,187	(10,234,736)	(880,402)	43,750	7,956,040	2,016,207	(221,428)	9,750,820	95%
2022	0.00%	4.00%	-	-	198,900,999	-	49,084,619	(9,922,821)	(888,117)	43,750	7,956,040	1,963,385	(215,344)	9,704,081	91%
2023	0.00%	4.00%	-	-	198,900,999	-	48,021,512	(9,600,040)	(895,394)	43,750	7,956,040	1,920,860	(209,034)	9,667,867	88%
2024	0.00%	4.00%	-	-	198,900,999	-	47,237,695	(9,261,535)	(902,218)	43,750	7,956,040	1,889,508	(202,400)	9,643,148	84%
2025	0.00%	4.00%	-	-	197,802,973	1,098,026	47,858,865	(8,923,663)	(908,572)	43,750	7,912,119	1,914,355	(195,770)	9,630,704	81%
2026	0.00%	4.00%	-	-	196,775,118	1,027,856	48,728,940	(8,568,169)	(914,432)	43,750	7,871,005	1,949,158	(188,777)	9,631,385	77%
2027	0.00%	4.00%	-	-	195,805,920	969,198	49,890,672	(8,201,388)	(919,774)	43,750	7,832,237	1,995,627	(181,548)	9,646,315	74%
2028	0.00%	4.00%	-	-	194,905,222	900,698	51,360,273	(7,846,983)	(924,574)	43,750	7,796,209	2,054,411	(174,556)	9,676,064	70%
2029	0.00%	4.00%	-	-	194,081,845	823,377	53,131,907	(7,488,286)	(928,816)	43,750	7,763,274	2,125,276	(167,467)	9,721,083	67%
2030	0.00%	4.00%	-	-	193,345,691	736,154	55,215,792	(7,128,688)	(932,489)	43,750	7,733,828	2,208,632	(160,349)	9,782,111	63%
2031	0.00%	4.00%	-	-	182,473,165	10,872,526	67,853,002	(6,763,657)	(935,598)	43,750	7,298,927	2,714,120	(153,110)	9,859,937	60%
2032	0.00%	4.00%	-	-	171,082,180	11,390,984	81,448,418	(6,402,304)	(938,161)	43,750	6,843,287	3,257,937	(145,934)	9,955,290	56%
2033	0.00%	4.00%	-	-	159,234,801	11,847,379	95,954,371	(6,022,159)	(940,217)	43,750	6,369,392	3,838,175	(138,373)	10,069,194	53%
2034	0.00%	4.00%	-	-	144,758,909	14,475,892	113,580,831	(5,641,487)	(941,826)	43,750	5,790,356	4,543,233	(130,791)	10,202,798	49%
2039	0.00%	4.00%	-	-	72,379,451	14,475,892	218,843,766	(3,830,870)	(946,914)	-	4,342,767	8,753,751	(95,556)	13,000,962	33%
2044	0.00%	4.00%	-	-	-	14,475,885	335,992,564	(2,379,172)	(962,009)	-	-	13,439,703	(66,824)	13,372,879	20%
2049	0.00%	4.00%	-	-	-	-	392,597,090	(1,371,043)	(1,008,185)	-	-	15,703,884	(47,585)	15,656,299	11%
2054	0.00%	4.00%	-	-	-	-	465,796,378	(749,464)	(1,095,072)	-	-	18,631,855	(36,891)	18,594,964	6%
2059	0.00%	4.00%	-	-	-	-	557,139,662	(380,608)	(1,221,774)	-	-	22,285,586	(32,048)	22,253,539	3%
2064	0.00%	4.00%	-	-	-	-	669,153,647	(174,287)	(1,386,475)	-	-	26,766,146	(31,215)	26,734,931	1%
2069	0.00%	4.00%	-	-	-	-	805,345,987	(69,563)	(1,589,830)	-	-	32,213,839	(33,188)	32,180,652	1%



# City of Detroit Police and Fire Retiree Health Care Trust

## Scenario 2 (4.0% 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					
\$ 120.00	\$ 120.00	\$ 120.00	\$ 145.58	\$ 170.00	\$ 395.00	\$ 120.00	\$ 295.00	\$ 120.00	\$ 120.00	n/a	n/a	n/a	Current Monthly Amount
4,709	134	1,222	-	519	336	960	39	-	555	743	-	406	Number in Group 12/31/2018
4,427	137	2,342	-	33	330	821	62	-	498	425	-	418	Number in Group 12/31/2019
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Include Group
\$ -	\$ -	\$ 125.00	\$ 150.58	\$ 175.00	\$ 400.00	\$ 125.00	\$ 300.00	\$ 125.00	\$ 125.00				Flat Dollar Monthly Lifetime Benefit (per person) Pre-65
\$ 125.00	\$ 125.00	\$ 125.00	\$ 125.00	\$ 125.00	\$ 125.00	\$ 125.00	\$ 300.00	\$ 125.00	\$ 125.00				Flat Dollar Monthly Lifetime Benefit (per person) Post-65
100%	100%	50%	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
\$193,245,662	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)
\$51,555,188	Investable Assets*
Never	Year of Insolvency
Never	Year Monetization/Cash is Needed
4.00%	Average Yield

118,029,998	Present Value of Benefits
21,598,766	Present Value of Expenses
139,628,764	Total
210,675,987	Valuation Assets (Immediate Monetization)^
(71,047,223)	Unfunded Actuarial Accrued Liability (UAAL)
496,063	Present Value of Future Contributions
(71,543,286)	Asset Deficit/(Surplus)
151.2%	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		Optional Bond Sale	Optional % Of Face	Face Value of Bonds BoY	Principal Repayment	Jan 1. Assets*	Trust		Grant / (Due City)	Interest			Dec. 31 Assets	% Contracts Remaining
	Ad-Hoc Prem. Increase	Investment Return						Benefit Payments	Expenses		Bond Coupon	Invested Assets	Ben./ Expen./ Grant/ Bond#		
2020	N/A	4.00%	\$ -	0.00%	\$198,900,999	\$ -	\$ 51,555,188	\$ (10,120,757)	\$ (872,256)	\$ 43,750	\$ 7,956,040	\$ 2,062,208	\$ (218,985)	\$ 9,799,262	98%
2021	0.00%	4.00%	-	-	198,900,999	-	50,405,187	(10,234,736)	(880,402)	43,750	7,956,040	2,016,207	(221,428)	9,750,820	95%
2022	0.00%	4.00%	-	-	198,900,999	-	49,084,619	(9,922,821)	(888,117)	43,750	7,956,040	1,963,385	(215,344)	9,704,081	91%
2023	0.00%	4.00%	-	-	198,900,999	-	48,021,512	(9,600,040)	(895,394)	43,750	7,956,040	1,920,860	(209,034)	9,667,867	88%
2024	0.00%	4.00%	-	-	198,900,999	-	47,237,695	(9,261,535)	(902,218)	43,750	7,956,040	1,889,508	(202,400)	9,643,148	84%
2025	0.00%	4.00%	-	-	197,802,973	1,098,026	47,858,865	(8,923,663)	(908,572)	43,750	7,912,119	1,914,355	(195,770)	9,630,704	81%
2026	0.00%	4.00%	-	-	196,775,118	1,027,856	48,728,940	(8,568,169)	(914,432)	43,750	7,871,005	1,949,158	(188,777)	9,631,385	77%
2027	0.00%	4.00%	-	-	195,805,920	969,198	49,890,672	(8,201,388)	(919,774)	43,750	7,832,237	1,995,627	(181,548)	9,646,315	74%
2028	0.00%	4.00%	-	-	194,905,222	900,698	51,360,273	(7,846,983)	(924,574)	43,750	7,796,209	2,054,411	(174,556)	9,676,064	70%
2029	0.00%	4.00%	-	-	194,081,845	823,377	53,131,907	(7,488,286)	(928,816)	43,750	7,763,274	2,125,276	(167,467)	9,721,083	67%
2030	0.00%	4.00%	-	-	193,345,691	736,154	55,215,792	(7,128,688)	(932,489)	43,750	7,733,828	2,208,632	(160,349)	9,782,111	63%
2031	0.00%	4.00%	-	-	182,473,165	10,872,526	67,853,002	(6,763,657)	(935,598)	43,750	7,298,927	2,714,120	(153,110)	9,859,937	60%
2032	0.00%	4.00%	-	-	171,082,180	11,390,984	81,448,418	(6,402,304)	(938,161)	43,750	6,843,287	3,257,937	(145,934)	9,955,290	56%
2033	0.00%	4.00%	-	-	159,234,801	11,847,379	95,954,371	(6,022,159)	(940,217)	43,750	6,369,392	3,838,175	(138,373)	10,069,194	53%
2034	0.00%	4.00%	-	-	144,758,909	14,475,892	113,580,831	(5,641,487)	(941,826)	43,750	5,790,356	4,543,233	(130,791)	10,202,798	49%
2039	0.00%	4.00%	-	-	72,379,451	14,475,892	218,843,766	(3,830,870)	(946,914)	-	4,342,767	8,753,751	(95,556)	13,000,962	33%
2044	0.00%	4.00%	-	-	-	14,475,885	335,992,564	(2,379,172)	(962,009)	-	-	13,439,703	(66,824)	13,372,879	20%
2049	0.00%	4.00%	-	-	-	-	392,597,090	(1,371,043)	(1,008,185)	-	-	15,703,884	(47,585)	15,656,299	11%
2054	0.00%	4.00%	-	-	-	-	465,796,378	(749,464)	(1,095,072)	-	-	18,631,855	(36,891)	18,594,964	6%
2059	0.00%	4.00%	-	-	-	-	557,139,662	(380,608)	(1,221,774)	-	-	22,285,586	(32,048)	22,253,539	3%
2064	0.00%	4.00%	-	-	-	-	669,153,647	(174,287)	(1,386,475)	-	-	26,766,146	(31,215)	26,734,931	1%
2069	0.00%	4.00%	-	-	-	-	805,345,987	(69,563)	(1,589,830)	-	-	32,213,839	(33,188)	32,180,652	1%



# City of Detroit Police and Fire Retiree Health Care Trust

## Scenario 3 (5.0% Return with 55% 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					
\$ 120.00	\$ 120.00	\$ 120.00	\$ 145.58	\$ 170.00	\$ 395.00	\$ 120.00	\$ 295.00	\$ 120.00	\$ 120.00	n/a	n/a	n/a	Current Monthly Amount
4,709	134	1,222	-	519	336	960	39	-	555	743	-	406	Number in Group 12/31/2018
4,427	137	2,342	-	33	330	821	62	-	498	425	-	418	Number in Group 12/31/2019
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Include Group
\$ -	\$ -	\$ 125.00	\$ 150.58	\$ 175.00	\$ 400.00	\$ 125.00	\$ 300.00	\$ 125.00	\$ 125.00				Flat Dollar Monthly Lifetime Benefit (per person) Pre-65
\$ 125.00	\$ 125.00	\$ 125.00	\$ 125.00	\$ 125.00	\$ 125.00	\$ 125.00	\$ 300.00	\$ 125.00	\$ 125.00				Flat Dollar Monthly Lifetime Benefit (per person) Post-65
100%	100%	50%	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
\$193,245,662	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)
\$51,555,188	Investable Assets*
Never	Year of Insolvency
Never	Year Monetization/Cash is Needed
5.00%	Average Yield

108,496,265	Present Value of Benefits
18,174,182	Present Value of Expenses
126,670,447	Total
160,950,737	Valuation Assets (Immediate Monetization)^
(34,280,290)	Unfunded Actuarial Accrued Liability (UAAL)
465,324	Present Value of Future Contributions
(34,745,614)	Asset Deficit/(Surplus)
127.4%	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		Optional Bond Sale	Optional % Of Face	Face Value of Bonds BoY	Principal Repayment	Jan 1. Assets*	Trust		Grant / (Due City)	Interest				Dec. 31 Assets	% Contracts Remaining
	Ad-Hoc Prem. Increase	Investment Return						Benefit Payments	Expenses		Bond Coupon	Invested Assets	Ben./ Expen./ Grant/ Bond#	Total		
2020	N/A	5.00%	\$ -	0.00%	\$198,900,999	\$ -	\$ 51,555,188	\$ (10,120,757)	\$ (872,256)	\$ 43,750	\$ 7,956,040	\$ 2,577,759	\$ (273,732)	\$ 10,260,068	\$ 50,865,992	98%
2021	0.00%	5.00%	-	-	198,900,999	-	50,865,992	(10,234,736)	(880,402)	43,750	7,956,040	2,543,300	(276,785)	10,222,555	50,017,159	95%
2022	0.00%	5.00%	-	-	198,900,999	-	50,017,159	(9,922,821)	(888,117)	43,750	7,956,040	2,500,858	(269,180)	10,187,718	49,437,690	91%
2023	0.00%	5.00%	-	-	198,900,999	-	49,437,690	(9,600,040)	(895,394)	43,750	7,956,040	2,471,885	(261,292)	10,166,632	49,152,639	88%
2024	0.00%	5.00%	-	-	198,900,999	-	49,152,639	(9,261,535)	(902,218)	43,750	7,956,040	2,457,632	(253,000)	10,160,672	49,193,307	84%
2025	0.00%	5.00%	-	-	197,802,973	1,098,026	50,291,333	(8,923,663)	(908,572)	43,750	7,912,119	2,514,567	(244,712)	10,181,973	50,684,821	81%
2026	0.00%	5.00%	-	-	196,775,118	1,027,856	51,712,677	(8,568,169)	(914,432)	43,750	7,871,005	2,585,634	(235,971)	10,220,667	52,494,494	77%
2027	0.00%	5.00%	-	-	195,805,920	969,198	53,463,691	(8,201,388)	(919,774)	43,750	7,832,237	2,673,185	(226,935)	10,278,486	54,664,765	74%
2028	0.00%	5.00%	-	-	194,905,222	900,698	55,565,463	(7,846,983)	(924,574)	43,750	7,796,209	2,778,273	(218,195)	10,356,287	57,193,943	70%
2029	0.00%	5.00%	-	-	194,081,845	823,377	58,017,320	(7,488,286)	(928,816)	43,750	7,763,274	2,900,866	(209,334)	10,454,806	60,098,774	67%
2030	0.00%	5.00%	-	-	193,345,691	736,154	60,834,928	(7,128,688)	(932,489)	43,750	7,733,828	3,041,746	(200,436)	10,575,138	63,392,639	63%
2031	0.00%	5.00%	-	-	182,473,165	10,872,526	74,265,165	(6,763,657)	(935,598)	43,750	7,298,927	3,713,258	(191,388)	10,820,797	77,430,458	60%
2032	0.00%	5.00%	-	-	171,082,180	11,390,984	88,821,442	(6,402,304)	(938,161)	43,750	6,843,287	4,441,072	(182,418)	11,101,941	92,626,668	56%
2033	0.00%	5.00%	-	-	159,234,801	11,847,379	104,474,047	(6,022,159)	(940,217)	43,750	6,369,392	5,223,702	(172,966)	11,420,129	108,975,550	53%
2034	0.00%	5.00%	-	-	144,758,909	14,475,892	123,451,442	(5,641,487)	(941,826)	43,750	5,790,356	6,172,572	(163,489)	11,799,439	128,711,318	49%
2039	0.00%	5.00%	-	-	72,379,451	14,475,892	239,668,985	(3,830,870)	(946,914)	-	4,342,767	11,983,449	(119,445)	16,206,772	251,097,973	33%
2044	0.00%	5.00%	-	-	-	14,475,885	376,971,907	(2,379,172)	(962,009)	-	-	18,848,595	(83,530)	18,765,066	392,395,791	20%
2049	0.00%	5.00%	-	-	-	-	464,503,433	(1,371,043)	(1,008,185)	-	-	23,225,172	(59,481)	23,165,691	485,289,895	11%
2054	0.00%	5.00%	-	-	-	-	580,668,220	(749,464)	(1,095,072)	-	-	29,033,411	(46,113)	28,987,298	607,810,981	6%
2059	0.00%	5.00%	-	-	-	-	731,276,470	(380,608)	(1,221,774)	-	-	36,563,823	(40,060)	36,523,764	766,197,852	3%
2064	0.00%	5.00%	-	-	-	-	924,402,588	(174,287)	(1,386,475)	-	-	46,220,129	(39,019)	46,181,110	969,022,936	1%
2069	0.00%	5.00%	-	-	-	-	1,170,796,973	(69,563)	(1,589,830)	-	-	58,539,849	(41,485)	58,498,364	1,227,635,944	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					
\$ 120.00	\$ 120.00	\$ 120.00	\$ 145.58	\$ 170.00	\$ 395.00	\$ 120.00	\$ 295.00	\$ 120.00	\$ 120.00	n/a	n/a	n/a	Current Monthly Amount
4,709	134	1,222	-	519	336	960	39	-	555	743	-	406	Number in Group 12/31/2018
4,427	137	2,342	-	33	330	821	62	-	498	425	-	418	Number in Group 12/31/2019
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Include Group
\$ -	\$ -	\$ 125.00	\$ 150.58	\$ 175.00	\$ 400.00	\$ 125.00	\$ 300.00	\$ 125.00	\$ 125.00				Flat Dollar Monthly Lifetime Benefit (per person) Pre-65
\$ 125.00	\$ 125.00	\$ 125.00	\$ 125.00	\$ 125.00	\$ 125.00	\$ 125.00	\$ 300.00	\$ 125.00	\$ 125.00				Flat Dollar Monthly Lifetime Benefit (per person) Post-65
100%	100%	50%	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
\$193,245,662	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)
\$51,555,188	Investable Assets*
Never	Year of Insolvency
Never	Year Monetization/Cash is Needed
5.00%	Average Yield

108,496,265	Present Value of Benefits
18,174,182	Present Value of Expenses
126,670,447	Total
210,675,987	Valuation Assets (Immediate Monetization)^
(84,005,540)	Unfunded Actuarial Accrued Liability (UAAL)
465,324	Present Value of Future Contributions
(84,470,864)	Asset Deficit/(Surplus)
166.7%	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.

Ad-Hoc						Trust				Interest					Dec. 31 Assets	% Contracts Remaining
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		
2020	N/A	5.00%	\$ -	0.00%	\$198,900,999	\$ -	\$ 51,555,188	\$ (10,120,757)	\$ (872,256)	\$ 43,750	\$ 7,956,040	\$ 2,577,759	\$ (273,732)	\$ 10,260,068	\$ 50,865,992	98%
2021	0.00%	5.00%	-	-	198,900,999	-	50,865,992	(10,234,736)	(880,402)	43,750	7,956,040	2,543,300	(276,785)	10,222,555	50,017,159	95%
2022	0.00%	5.00%	-	-	198,900,999	-	50,017,159	(9,922,821)	(888,117)	43,750	7,956,040	2,500,858	(269,180)	10,187,718	49,437,690	91%
2023	0.00%	5.00%	-	-	198,900,999	-	49,437,690	(9,600,040)	(895,394)	43,750	7,956,040	2,471,885	(261,292)	10,166,632	49,152,639	88%
2024	0.00%	5.00%	-	-	198,900,999	-	49,152,639	(9,261,535)	(902,218)	43,750	7,956,040	2,457,632	(253,000)	10,160,672	49,193,307	84%
2025	0.00%	5.00%	-	-	197,802,973	1,098,026	50,291,333	(8,923,663)	(908,572)	43,750	7,912,119	2,514,567	(244,712)	10,181,973	50,684,821	81%
2026	0.00%	5.00%	-	-	196,775,118	1,027,856	51,712,677	(8,568,169)	(914,432)	43,750	7,871,005	2,585,634	(235,971)	10,220,667	52,494,494	77%
2027	0.00%	5.00%	-	-	195,805,920	969,198	53,463,691	(8,201,388)	(919,774)	43,750	7,832,237	2,673,185	(226,935)	10,278,486	54,664,765	74%
2028	0.00%	5.00%	-	-	194,905,222	900,698	55,565,463	(7,846,983)	(924,574)	43,750	7,796,209	2,778,273	(218,195)	10,356,287	57,193,943	70%
2029	0.00%	5.00%	-	-	194,081,845	823,377	58,017,320	(7,488,286)	(928,816)	43,750	7,763,274	2,900,866	(209,334)	10,454,806	60,098,774	67%
2030	0.00%	5.00%	-	-	193,345,691	736,154	60,834,928	(7,128,688)	(932,489)	43,750	7,733,828	3,041,746	(200,436)	10,575,138	63,392,639	63%
2031	0.00%	5.00%	-	-	182,473,165	10,872,526	74,265,165	(6,763,657)	(935,598)	43,750	7,298,927	3,713,258	(191,388)	10,820,797	77,430,458	60%
2032	0.00%	5.00%	-	-	171,082,180	11,390,984	88,821,442	(6,402,304)	(938,161)	43,750	6,843,287	4,441,072	(182,418)	11,101,941	92,626,668	56%
2033	0.00%	5.00%	-	-	159,234,801	11,847,379	104,474,047	(6,022,159)	(940,217)	43,750	6,369,392	5,223,702	(172,966)	11,420,129	108,975,550	53%
2034	0.00%	5.00%	-	-	144,758,909	14,475,892	123,451,442	(5,641,487)	(941,826)	43,750	5,790,356	6,172,572	(163,489)	11,799,439	128,711,318	49%
2039	0.00%	5.00%	-	-	72,379,451	14,475,892	239,668,985	(3,830,870)	(946,914)	-	4,342,767	11,983,449	(119,445)	16,206,772	251,097,973	33%
2044	0.00%	5.00%	-	-	-	14,475,885	376,971,907	(2,379,172)	(962,009)	-	-	18,848,595	(83,530)	18,765,066	392,395,791	20%
2049	0.00%	5.00%	-	-	-	-	464,503,433	(1,371,043)	(1,008,185)	-	-	23,225,172	(59,481)	23,165,691	485,289,895	11%
2054	0.00%	5.00%	-	-	-	-	580,668,220	(749,464)	(1,095,072)	-	-	29,033,411	(46,113)	28,987,298	607,810,981	6%
2059	0.00%	5.00%	-	-	-	-	731,276,470	(380,608)	(1,221,774)	-	-	36,563,823	(40,060)	36,523,764	766,197,852	3%
2064	0.00%	5.00%	-	-	-	-	924,402,588	(174,287)	(1,386,475)	-	-	46,220,129	(39,019)	46,181,110	969,022,936	1%
2069	0.00%	5.00%	-	-	-	-	1,170,796,973	(69,563)	(1,589,830)	-	-	58,539,849	(41,485)	58,498,364	1,227,635,944	1%





# City of Detroit Police and Fire Retiree Health Care Trust

## Scenario 5 (3.0% Return with 55% 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					
\$ 120.00	\$ 120.00	\$ 120.00	\$ 145.58	\$ 170.00	\$ 395.00	\$ 120.00	\$ 295.00	\$ 120.00	\$ 120.00	n/a	n/a	n/a	Current Monthly Amount
4,709	134	1,222	-	519	336	960	39	-	555	743	-	406	Number in Group 12/31/2018
4,427	137	2,342	-	33	330	821	62	-	498	425	-	418	Number in Group 12/31/2019
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Include Group
\$ -	\$ -	\$ 125.00	\$ 150.58	\$ 175.00	\$ 400.00	\$ 125.00	\$ 300.00	\$ 125.00	\$ 125.00				Flat Dollar Monthly Lifetime Benefit (per person) Pre-65
\$ 125.00	\$ 125.00	\$ 125.00	\$ 125.00	\$ 125.00	\$ 125.00	\$ 125.00	\$ 300.00	\$ 125.00	\$ 125.00				Flat Dollar Monthly Lifetime Benefit (per person) Post-65
100%	100%	50%	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
\$193,245,662	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)
\$51,555,188	Investable Assets*
Never	Year of Insolvency
Never	Year Monetization/Cash is Needed
3.00%	Average Yield

129,215,890	Present Value of Benefits
26,183,815	Present Value of Expenses
155,399,705	Total
160,950,737	Valuation Assets (Immediate Monetization)^
(5,551,032)	Unfunded Actuarial Accrued Liability (UAAL)
530,061	Present Value of Future Contributions
(6,081,093)	Asset Deficit/(Surplus)
103.9%	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			Optional Bond Sale	Optional % Of Face	Face Value of Bonds BoY	Principal Repayment	Jan 1. Assets*	Trust		Grant / (Due City)	Interest				Dec. 31 Assets	% Contracts Remaining
	Ad-Hoc Prem. Increase	Investment Return	Investment						Benefit Payments	Expenses		Bond Coupon	Invested Assets	Ben./ Expen./ Grant/ Bond#	Total		
2020	N/A	3.00%	\$ -	-	0.00%	\$198,900,999	\$ -	\$ 51,555,188	\$ (10,120,757)	\$ (872,256)	\$ 43,750	\$ 7,956,040	\$ 1,546,656	\$ (164,239)	\$ 9,338,457	\$ 49,944,381	98%
2021	0.00%	3.00%	-	-	-	198,900,999	-	49,944,381	(10,234,736)	(880,402)	43,750	7,956,040	1,498,331	(166,071)	9,288,301	48,161,294	95%
2022	0.00%	3.00%	-	-	-	198,900,999	-	48,161,294	(9,922,821)	(888,117)	43,750	7,956,040	1,444,839	(161,508)	9,239,371	46,633,478	91%
2023	0.00%	3.00%	-	-	-	198,900,999	-	46,633,478	(9,600,040)	(895,394)	43,750	7,956,040	1,399,004	(156,775)	9,198,269	45,380,063	88%
2024	0.00%	3.00%	-	-	-	198,900,999	-	45,380,063	(9,261,535)	(902,218)	43,750	7,956,040	1,361,402	(151,800)	9,165,642	44,425,701	84%
2025	0.00%	3.00%	-	-	-	197,802,973	1,098,026	45,523,727	(8,923,663)	(908,572)	43,750	7,912,119	1,365,712	(146,827)	9,131,003	44,866,245	81%
2026	0.00%	3.00%	-	-	-	196,775,118	1,027,856	45,894,101	(8,568,169)	(914,432)	43,750	7,871,005	1,376,823	(141,583)	9,106,245	45,561,495	77%
2027	0.00%	3.00%	-	-	-	195,805,920	969,198	46,530,693	(8,201,388)	(919,774)	43,750	7,832,237	1,395,921	(136,161)	9,091,996	46,545,277	74%
2028	0.00%	3.00%	-	-	-	194,905,222	900,698	47,445,975	(7,846,983)	(924,574)	43,750	7,796,209	1,423,379	(130,917)	9,088,671	47,806,839	70%
2029	0.00%	3.00%	-	-	-	194,081,845	823,377	48,630,216	(7,488,286)	(928,816)	43,750	7,763,274	1,458,906	(125,600)	9,096,580	49,353,444	67%
2030	0.00%	3.00%	-	-	-	193,345,691	736,154	50,089,598	(7,128,688)	(932,489)	43,750	7,733,828	1,502,688	(120,261)	9,116,254	51,188,425	63%
2031	0.00%	3.00%	-	-	-	182,473,165	10,872,526	62,060,951	(6,763,657)	(935,598)	43,750	7,298,927	1,861,829	(114,833)	9,045,923	63,451,369	60%
2032	0.00%	3.00%	-	-	-	171,082,180	11,390,984	74,842,353	(6,402,304)	(938,161)	43,750	6,843,287	2,245,271	(109,451)	8,979,107	76,524,745	56%
2033	0.00%	3.00%	-	-	-	159,234,801	11,847,379	88,372,124	(6,022,159)	(940,217)	43,750	6,369,392	2,651,164	(103,779)	8,916,776	90,370,274	53%
2034	0.00%	3.00%	-	-	-	144,758,909	14,475,892	104,846,166	(5,641,487)	(941,826)	43,750	5,790,356	3,145,385	(98,093)	8,837,648	107,144,251	49%
2039	0.00%	3.00%	-	-	-	72,379,451	14,475,892	200,769,881	(3,830,870)	(946,914)	-	4,342,767	6,023,096	(71,667)	10,294,197	206,286,293	33%
2044	0.00%	3.00%	-	-	-	-	14,475,885	301,156,031	(2,379,172)	(962,009)	-	-	9,034,681	(50,118)	8,984,563	306,799,412	20%
2049	0.00%	3.00%	-	-	-	-	-	333,352,390	(1,371,043)	(1,008,185)	-	-	10,000,572	(35,688)	9,964,883	340,938,045	11%
2054	0.00%	3.00%	-	-	-	-	-	374,892,258	(749,464)	(1,095,072)	-	-	11,246,768	(27,668)	11,219,100	384,266,821	6%
2059	0.00%	3.00%	-	-	-	-	-	425,270,986	(380,608)	(1,221,774)	-	-	12,758,130	(24,036)	12,734,094	436,402,698	3%
2064	0.00%	3.00%	-	-	-	-	-	484,528,676	(174,287)	(1,386,475)	-	-	14,535,860	(23,411)	14,512,449	497,480,363	1%
2069	0.00%	3.00%	-	-	-	-	-	553,133,965	(69,563)	(1,589,830)	-	-	16,594,019	(24,891)	16,569,128	568,043,701	1%



# City of Detroit Police and Fire Retiree Health Care Trust

## Scenario 6 (3.0% 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					
\$ 120.00	\$ 120.00	\$ 120.00	\$ 145.58	\$ 170.00	\$ 395.00	\$ 120.00	\$ 295.00	\$ 120.00	\$ 120.00	n/a	n/a	n/a	Current Monthly Amount
4,709	134	1,222	-	519	336	960	39	-	555	743	-	406	Number in Group 12/31/2018
4,427	137	2,342	-	33	330	821	62	-	498	425	-	418	Number in Group 12/31/2019
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Include Group
\$ -	\$ -	\$ 125.00	\$ 150.58	\$ 175.00	\$ 400.00	\$ 125.00	\$ 300.00	\$ 125.00	\$ 125.00				Flat Dollar Monthly Lifetime Benefit (per person) Pre-65
\$ 125.00	\$ 125.00	\$ 125.00	\$ 125.00	\$ 125.00	\$ 125.00	\$ 125.00	\$ 300.00	\$ 125.00	\$ 125.00				Flat Dollar Monthly Lifetime Benefit (per person) Post-65
100%	100%	50%	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
\$193,245,662	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)
\$51,555,188	Investable Assets*
Never	Year of Insolvency
Never	Year Monetization/Cash is Needed
3.00%	Average Yield

129,215,890	Present Value of Benefits
26,183,815	Present Value of Expenses
155,399,705	Total
210,675,987	Valuation Assets (Immediate Monetization)^
(55,276,282)	Unfunded Actuarial Accrued Liability (UAAL)
530,061	Present Value of Future Contributions
(55,806,343)	Asset Deficit/(Surplus)
135.9%	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.

Ad-Hoc						Trust						Interest					Dec. 31 Assets	% Contracts Remaining
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				
2020	N/A	3.00%	\$ -	0.00%	\$198,900,999	\$ -	\$ 51,555,188	\$ (10,120,757)	\$ (872,256)	\$ 43,750	\$ 7,956,040	\$ 1,546,656	\$ (164,239)	\$ 9,338,457	\$ 49,944,381	98%		
2021	0.00%	3.00%	-	-	198,900,999	-	49,944,381	(10,234,736)	(880,402)	43,750	7,956,040	1,498,331	(166,071)	9,288,301	48,161,294	95%		
2022	0.00%	3.00%	-	-	198,900,999	-	48,161,294	(9,922,821)	(888,117)	43,750	7,956,040	1,444,839	(161,508)	9,239,371	46,633,478	91%		
2023	0.00%	3.00%	-	-	198,900,999	-	46,633,478	(9,600,040)	(895,394)	43,750	7,956,040	1,399,004	(156,775)	9,198,269	45,380,063	88%		
2024	0.00%	3.00%	-	-	198,900,999	-	45,380,063	(9,261,535)	(902,218)	43,750	7,956,040	1,361,402	(151,800)	9,165,642	44,425,701	84%		
2025	0.00%	3.00%	-	-	197,802,973	1,098,026	45,523,727	(8,923,663)	(908,572)	43,750	7,912,119	1,365,712	(146,827)	9,131,003	44,866,245	81%		
2026	0.00%	3.00%	-	-	196,775,118	1,027,856	45,894,101	(8,568,169)	(914,432)	43,750	7,871,005	1,376,823	(141,583)	9,106,245	45,561,495	77%		
2027	0.00%	3.00%	-	-	195,805,920	969,198	46,530,693	(8,201,388)	(919,774)	43,750	7,832,237	1,395,921	(136,161)	9,091,996	46,545,277	74%		
2028	0.00%	3.00%	-	-	194,905,222	900,698	47,445,975	(7,846,983)	(924,574)	43,750	7,796,209	1,423,379	(130,917)	9,088,671	47,806,839	70%		
2029	0.00%	3.00%	-	-	194,081,845	823,377	48,630,216	(7,488,286)	(928,816)	43,750	7,763,274	1,458,906	(125,600)	9,096,580	49,353,444	67%		
2030	0.00%	3.00%	-	-	193,345,691	736,154	50,089,598	(7,128,688)	(932,489)	43,750	7,733,828	1,502,688	(120,261)	9,116,254	51,188,425	63%		
2031	0.00%	3.00%	-	-	182,473,165	10,872,526	62,060,951	(6,763,657)	(935,598)	43,750	7,298,927	1,861,829	(114,833)	9,045,923	63,451,369	60%		
2032	0.00%	3.00%	-	-	171,082,180	11,390,984	74,842,353	(6,402,304)	(938,161)	43,750	6,843,287	2,245,271	(109,451)	8,979,107	76,524,745	56%		
2033	0.00%	3.00%	-	-	159,234,801	11,847,379	88,372,124	(6,022,159)	(940,217)	43,750	6,369,392	2,651,164	(103,779)	8,916,776	90,370,274	53%		
2034	0.00%	3.00%	-	-	144,758,909	14,475,892	104,846,166	(5,641,487)	(941,826)	43,750	5,790,356	3,145,385	(98,093)	8,837,648	107,144,251	49%		
2039	0.00%	3.00%	-	-	72,379,451	14,475,892	200,769,881	(3,830,870)	(946,914)	-	4,342,767	6,023,096	(71,667)	10,294,197	206,286,293	33%		
2044	0.00%	3.00%	-	-	-	14,475,885	301,156,031	(2,379,172)	(962,009)	-	-	9,034,681	(50,118)	8,984,563	306,799,412	20%		
2049	0.00%	3.00%	-	-	-	-	333,352,390	(1,371,043)	(1,008,185)	-	-	10,000,572	(35,688)	9,964,883	340,938,045	11%		
2054	0.00%	3.00%	-	-	-	-	374,892,258	(749,464)	(1,095,072)	-	-	11,246,768	(27,668)	11,219,100	384,266,821	6%		
2059	0.00%	3.00%	-	-	-	-	425,270,986	(380,608)	(1,221,774)	-	-	12,758,130	(24,036)	12,734,094	436,402,698	3%		
2064	0.00%	3.00%	-	-	-	-	484,528,676	(174,287)	(1,386,475)	-	-	14,535,860	(23,411)	14,512,449	497,480,363	1%		
2069	0.00%	3.00%	-	-	-	-	553,133,965	(69,563)	(1,589,830)	-	-	16,594,019	(24,891)	16,569,128	568,043,701	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)

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					
\$ 120.00	\$ 120.00	\$ 120.00	\$ 145.58	\$ 170.00	\$ 395.00	\$ 120.00	\$ 295.00	\$ 120.00	\$ 120.00	n/a	n/a	n/a	Current Monthly Amount
4,709	134	1,222	-	519	336	960	39	-	555	743	-	406	Number in Group 12/31/2018
4,427	137	2,342	-	33	330	821	62	-	498	425	-	418	Number in Group 12/31/2019
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Include Group
\$ -	\$ -	\$ 125.00	\$ 150.58	\$ 175.00	\$ 400.00	\$ 125.00	\$ 300.00	\$ 125.00	\$ 125.00				Flat Dollar Monthly Lifetime Benefit (per person) Pre-65
\$ 125.00	\$ 125.00	\$ 125.00	\$ 125.00	\$ 125.00	\$ 125.00	\$ 125.00	\$ 300.00	\$ 125.00	\$ 125.00				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%	Annual increase in Flat Dollar Benefit

\$253,900,999	Original Face Value of Bonds at 12/10/2014
\$193,245,662	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)
\$51,555,188	Investable Assets*
Never	Year of Insolvency
Never	Year Monetization/Cash is Needed
4.00%	Average Yield

146,201,458	Present Value of Benefits
21,598,766	Present Value of Expenses
167,800,224	Total
160,950,737	Valuation Assets (Immediate Monetization)^
6,849,487	Unfunded Actuarial Accrued Liability (UAAL)
496,063	Present Value of Future Contributions
6,353,424	Asset Deficit/(Surplus)
96.2%	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.

Ad-Hoc					Trust					Interest					Dec. 31 Assets	% Contracts Remaining
Ad-Hoc Prem.	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			
Year	Increase															
2020	N/A	4.00%	\$ -	0.00%	\$198,900,999	\$ -	\$ 51,555,188	\$ (10,120,757)	\$ (872,256)	\$ 43,750	\$ 7,956,040	\$ 2,062,208	\$ (218,985)	\$ 9,799,262	\$ 50,405,187	98%
2021	0.00%	4.00%	-	-	198,900,999	-	50,405,187	(13,507,127)	(880,402)	43,750	7,956,040	2,016,207	(286,876)	9,685,372	45,746,780	95%
2022	0.00%	4.00%	-	-	198,900,999	-	45,746,780	(13,009,896)	(888,117)	43,750	7,956,040	1,829,871	(277,085)	9,508,876	41,401,343	91%
2023	0.00%	4.00%	-	-	198,900,999	-	41,401,343	(12,530,798)	(895,394)	43,750	7,956,040	1,656,054	(267,649)	9,344,445	37,363,347	88%
2024	0.00%	4.00%	-	-	198,900,999	-	37,363,347	(12,028,953)	(902,218)	43,750	7,956,040	1,494,534	(257,748)	9,192,825	33,668,751	84%
2025	0.00%	4.00%	-	-	197,802,973	1,098,026	34,766,776	(11,535,371)	(908,572)	43,750	7,912,119	1,390,671	(248,004)	9,054,786	31,421,369	81%
2026	0.00%	4.00%	-	-	196,775,118	1,027,856	32,449,225	(11,026,292)	(914,432)	43,750	7,871,005	1,297,969	(237,939)	8,931,034	29,483,285	77%
2027	0.00%	4.00%	-	-	195,805,920	969,198	30,452,482	(10,518,120)	(919,774)	43,750	7,832,237	1,218,099	(227,883)	8,822,453	27,880,791	74%
2028	0.00%	4.00%	-	-	194,905,222	900,698	28,781,489	(10,021,328)	(924,574)	43,750	7,796,209	1,151,260	(218,043)	8,729,425	26,608,763	70%
2029	0.00%	4.00%	-	-	194,081,845	823,377	27,432,140	(9,508,783)	(928,816)	43,750	7,763,274	1,097,286	(207,877)	8,652,682	25,690,974	67%
2030	0.00%	4.00%	-	-	193,345,691	736,154	26,427,128	(8,996,410)	(932,489)	43,750	7,733,828	1,057,085	(197,703)	8,593,210	25,135,188	63%
2031	0.00%	4.00%	-	-	182,473,165	10,872,526	36,007,714	(8,491,091)	(935,598)	43,750	7,298,927	1,440,309	(187,659)	8,551,576	35,176,352	60%
2032	0.00%	4.00%	-	-	171,082,180	11,390,984	46,567,337	(7,995,493)	(938,161)	43,750	6,843,287	1,862,693	(177,798)	8,528,183	46,205,615	56%
2033	0.00%	4.00%	-	-	159,234,801	11,847,379	58,052,994	(7,480,309)	(940,217)	43,750	6,369,392	2,322,120	(167,536)	8,523,976	58,200,194	53%
2034	0.00%	4.00%	-	-	144,758,909	14,475,892	72,676,086	(6,971,930)	(941,826)	43,750	5,790,356	2,907,043	(157,400)	8,540,000	73,346,080	49%
2039	0.00%	4.00%	-	-	72,379,451	14,475,892	163,079,024	(4,581,040)	(946,914)	-	4,342,767	6,523,161	(110,559)	10,755,369	168,306,440	33%
2044	0.00%	4.00%	-	-	-	14,475,885	264,969,964	(2,706,918)	(962,009)	-	-	10,598,799	(73,379)	10,525,420	271,826,457	20%
2049	0.00%	4.00%	-	-	-	-	305,021,282	(1,461,393)	(1,008,185)	-	-	12,200,851	(49,392)	12,151,460	314,703,164	11%
2054	0.00%	4.00%	-	-	-	-	358,935,383	(768,761)	(1,095,072)	-	-	14,357,415	(37,277)	14,320,139	371,391,689	6%
2059	0.00%	4.00%	-	-	-	-	427,069,591	(382,733)	(1,221,774)	-	-	17,082,784	(32,090)	17,050,693	442,515,777	3%
2064	0.00%	4.00%	-	-	-	-	510,898,034	(174,410)	(1,386,475)	-	-	20,435,921	(31,218)	20,404,704	529,741,853	1%
2069	0.00%	4.00%	-	-	-	-	612,803,553	(69,567)	(1,589,830)	-	-	24,512,142	(33,188)	24,478,954	635,623,110	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)

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					
\$ 120.00	\$ 120.00	\$ 120.00	\$ 145.58	\$ 170.00	\$ 395.00	\$ 120.00	\$ 295.00	\$ 120.00	\$ 120.00	n/a	n/a	n/a	Current Monthly Amount
4,709	134	1,222	-	519	336	960	39	-	555	743	-	406	Number in Group 12/31/2018
4,427	137	2,342	-	33	330	821	62	-	498	425	-	418	Number in Group 12/31/2019
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Include Group
\$ -	\$ -	\$ 125.00	\$ 150.58	\$ 175.00	\$ 400.00	\$ 125.00	\$ 300.00	\$ 125.00	\$ 125.00				Flat Dollar Monthly Lifetime Benefit (per person) Pre-65
\$ 125.00	\$ 125.00	\$ 125.00	\$ 125.00	\$ 125.00	\$ 125.00	\$ 125.00	\$ 300.00	\$ 125.00	\$ 125.00				Flat Dollar Monthly Lifetime Benefit (per person) Post-65
100%	100%	50%	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
\$193,245,662	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)
\$51,555,188	Investable Assets*
Never	Year of Insolvency
Never	Year Monetization/Cash is Needed
4.00%	Average Yield

141,627,119	Present Value of Benefits
21,598,766	Present Value of Expenses
163,225,885	Total
160,950,737	Valuation Assets (Immediate Monetization)^
2,275,148	Unfunded Actuarial Accrued Liability (UAAL)
496,063	Present Value of Future Contributions
1,779,085	Asset Deficit/(Surplus)
98.9%	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.

Ad-Hoc						Trust				Interest					Dec. 31 Assets	% Contracts Remaining
Ad-Hoc Prem.	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			
Year	Increase															
2020	N/A	4.00%	\$ -	0.00%	\$198,900,999	\$ -	\$ 51,555,188	\$(10,120,757)	\$(872,256)	\$ 43,750	\$ 7,956,040	\$ 2,062,208	\$(218,985)	\$ 9,799,262	\$ 50,405,187	98%
2021	2.00%	4.00%	-	-	198,900,999	-	50,405,187	\$(10,439,431)	\$(880,402)	43,750	7,956,040	2,016,207	\$(225,522)	9,746,726	48,875,830	95%
2022	2.00%	4.00%	-	-	198,900,999	-	48,875,830	\$(10,323,703)	\$(888,117)	43,750	7,956,040	1,955,033	\$(223,361)	9,687,712	47,395,472	91%
2023	2.00%	4.00%	-	-	198,900,999	-	47,395,472	\$(10,187,640)	\$(895,394)	43,750	7,956,040	1,895,819	\$(220,786)	9,631,073	45,987,262	88%
2024	2.00%	4.00%	-	-	198,900,999	-	45,987,262	\$(10,024,983)	\$(902,218)	43,750	7,956,040	1,839,491	\$(217,669)	9,577,861	44,681,673	84%
2025	2.00%	4.00%	-	-	197,802,973	1,098,026	45,779,698	\$(9,852,445)	\$(908,572)	43,750	7,912,119	1,831,188	\$(214,345)	9,528,962	44,591,392	81%
2026	2.00%	4.00%	-	-	196,775,118	1,027,856	45,619,248	\$(9,649,149)	\$(914,432)	43,750	7,871,005	1,824,770	\$(210,397)	9,485,378	44,584,795	77%
2027	2.00%	4.00%	-	-	195,805,920	969,198	45,553,992	\$(9,420,817)	\$(919,774)	43,750	7,832,237	1,822,160	\$(205,937)	9,448,460	44,705,611	74%
2028	2.00%	4.00%	-	-	194,905,222	900,698	45,606,309	\$(9,193,991)	\$(924,574)	43,750	7,796,209	1,824,252	\$(201,496)	9,418,965	44,950,458	70%
2029	2.00%	4.00%	-	-	194,081,845	823,377	45,773,836	\$(8,949,195)	\$(928,816)	43,750	7,763,274	1,830,953	\$(196,685)	9,397,542	45,337,116	67%
2030	2.00%	4.00%	-	-	193,345,691	736,154	46,073,270	\$(8,689,830)	\$(932,489)	43,750	7,733,828	1,842,931	\$(191,571)	9,385,187	45,879,888	63%
2031	2.00%	4.00%	-	-	182,473,165	10,872,526	56,752,414	\$(8,409,758)	\$(935,598)	43,750	7,298,927	2,270,097	\$(186,032)	9,382,991	56,833,799	60%
2032	2.00%	4.00%	-	-	171,082,180	11,390,984	68,224,784	\$(8,119,670)	\$(938,161)	43,750	6,843,287	2,728,991	\$(180,282)	9,391,997	68,602,700	56%
2033	2.00%	4.00%	-	-	159,234,801	11,847,379	80,450,079	\$(7,790,305)	\$(940,217)	43,750	6,369,392	3,218,003	\$(173,735)	9,413,660	81,176,967	53%
2034	2.00%	4.00%	-	-	144,758,909	14,475,892	95,652,858	\$(7,443,822)	\$(941,826)	43,750	5,790,356	3,826,114	\$(166,838)	9,449,633	96,760,593	49%
2039	2.00%	4.00%	-	-	72,379,451	14,475,892	187,043,843	\$(5,580,854)	\$(946,914)	-	4,342,767	7,481,754	\$(130,555)	11,693,965	192,210,040	33%
2044	2.00%	4.00%	-	-	-	14,475,885	288,203,927	\$(3,826,749)	\$(962,009)	-	-	11,528,157	\$(95,775)	11,432,382	294,847,550	20%
2049	2.00%	4.00%	-	-	-	-	327,284,672	\$(2,434,760)	\$(1,008,185)	-	-	13,091,387	\$(68,859)	13,022,528	336,864,255	11%
2054	2.00%	4.00%	-	-	-	-	381,211,004	\$(1,469,456)	\$(1,095,072)	-	-	15,248,440	\$(51,291)	15,197,150	393,843,625	6%
2059	2.00%	4.00%	-	-	-	-	450,869,891	\$(823,919)	\$(1,221,774)	-	-	18,034,796	\$(40,914)	17,993,882	466,818,080	3%
2064	2.00%	4.00%	-	-	-	-	537,871,405	\$(416,555)	\$(1,386,475)	-	-	21,514,856	\$(36,061)	21,478,796	557,547,171	1%
2069	2.00%	4.00%	-	-	-	-	644,583,814	\$(183,563)	\$(1,589,830)	-	-	25,783,353	\$(35,468)	25,747,885	668,558,306	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	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					
\$ 120.00	\$ 120.00	\$ 120.00	\$ 145.58	\$ 170.00	\$ 395.00	\$ 120.00	\$ 295.00	\$ 120.00	\$ 120.00	n/a	n/a	n/a	Current Monthly Amount
4,709	134	1,222	-	519	336	960	39	-	555	743	-	406	Number in Group 12/31/2018
4,427	137	2,342	-	33	330	821	62	-	498	425	-	418	Number in Group 12/31/2019
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Include Group
\$ -	\$ -	\$ 125.00	\$ 150.58	\$ 175.00	\$ 400.00	\$ 125.00	\$ 300.00	\$ 125.00	\$ 125.00				Flat Dollar Monthly Lifetime Benefit (per person) Pre-65
\$ 125.00	\$ 125.00	\$ 125.00	\$ 125.00	\$ 125.00	\$ 125.00	\$ 125.00	\$ 300.00	\$ 125.00	\$ 125.00				Flat Dollar Monthly Lifetime Benefit (per person) Post-65
100%	100%	40%	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%	Annual increase in Flat Dollar Benefit

\$253,900,999	Original Face Value of Bonds at 12/10/2014
\$193,245,662	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)
\$51,555,188	Investable Assets*
Never	Year of Insolvency
Never	Year Monetization/Cash is Needed
4.00%	Average Yield

112,395,706	Present Value of Benefits
21,598,766	Present Value of Expenses
133,994,472	Total
160,950,737	Valuation Assets (Immediate Monetization)^
(26,956,265)	Unfunded Actuarial Accrued Liability (UAAL)
496,063	Present Value of Future Contributions
(27,452,328)	Asset Deficit/(Surplus)
120.5%	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.

	Ad-Hoc					Trust					Interest						
	Ad-Hoc Prem.	Investment	Optional	Optional	Face Value of	Principal	Jan 1.	Benefit			Grant /	Bond	Invested	Ben./ Expen./			
Year	Increase	Return	Bond Sale	% Of Face	Bonds BoY	Repayment	Assets*	Payments	Expenses	(Due City)	Coupon	Assets	Grant/ Bond#	Total	Dec. 31	% Contracts	
															Assets	Remaining	
2020	N/A	4.00%	\$ -	0.00%	\$198,900,999	\$ -	\$ 51,555,188	\$ (10,120,757)	\$ (872,256)	\$ 43,750	\$ 7,956,040	\$ 2,062,208	\$ (218,985)	\$ 9,799,262	\$ 50,405,187	98%	
2021	0.00%	4.00%	-	-	198,900,999	-	50,405,187	(9,580,258)	(880,402)	43,750	7,956,040	2,016,207	(208,338)	9,763,909	49,752,186	95%	
2022	0.00%	4.00%	-	-	198,900,999	-	49,752,186	(9,305,406)	(888,117)	43,750	7,956,040	1,990,087	(202,995)	9,743,132	49,345,546	91%	
2023	0.00%	4.00%	-	-	198,900,999	-	49,345,546	(9,013,889)	(895,394)	43,750	7,956,040	1,973,822	(197,311)	9,732,551	49,212,565	88%	
2024	0.00%	4.00%	-	-	198,900,999	-	49,212,565	(8,708,051)	(902,218)	43,750	7,956,040	1,968,503	(191,330)	9,733,212	49,379,257	84%	
2025	0.00%	4.00%	-	-	197,802,973	1,098,026	50,477,283	(8,401,321)	(908,572)	43,750	7,912,119	2,019,091	(185,323)	9,745,887	50,957,027	81%	
2026	0.00%	4.00%	-	-	196,775,118	1,027,856	51,984,883	(8,076,544)	(914,432)	43,750	7,871,005	2,079,395	(178,945)	9,771,455	52,809,112	77%	
2027	0.00%	4.00%	-	-	195,805,920	969,198	53,778,310	(7,738,042)	(919,774)	43,750	7,832,237	2,151,132	(172,281)	9,811,088	54,975,332	74%	
2028	0.00%	4.00%	-	-	194,905,222	900,698	55,876,030	(7,412,114)	(924,574)	43,750	7,796,209	2,235,041	(165,859)	9,865,391	57,448,483	70%	
2029	0.00%	4.00%	-	-	194,081,845	823,377	58,271,860	(7,084,187)	(928,816)	43,750	7,763,274	2,330,874	(159,385)	9,934,763	60,237,370	67%	
2030	0.00%	4.00%	-	-	193,345,691	736,154	60,973,524	(6,755,143)	(932,489)	43,750	7,733,828	2,438,941	(152,878)	10,019,891	63,349,533	63%	
2031	0.00%	4.00%	-	-	182,473,165	10,872,526	74,222,059	(6,418,170)	(935,598)	43,750	7,298,927	2,968,882	(146,200)	10,121,609	77,033,649	60%	
2032	0.00%	4.00%	-	-	171,082,180	11,390,984	88,424,634	(6,083,666)	(938,161)	43,750	6,843,287	3,536,985	(139,562)	10,240,711	91,687,267	56%	
2033	0.00%	4.00%	-	-	159,234,801	11,847,379	103,534,647	(5,730,529)	(940,217)	43,750	6,369,392	4,141,386	(132,540)	10,378,238	107,285,888	53%	
2034	0.00%	4.00%	-	-	144,758,909	14,475,892	121,761,780	(5,375,398)	(941,826)	43,750	5,790,356	4,870,471	(125,469)	10,535,358	126,023,663	49%	
2039	0.00%	4.00%	-	-	72,379,451	14,475,892	229,996,714	(3,680,836)	(946,914)	-	4,342,767	9,199,869	(92,555)	13,450,081	238,819,044	33%	
2044	0.00%	4.00%	-	-	-	14,475,885	350,197,084	(2,313,623)	(962,009)	-	-	14,007,883	(65,513)	13,942,371	360,863,822	20%	
2049	0.00%	4.00%	-	-	-	-	410,112,251	(1,352,973)	(1,008,185)	-	-	16,404,490	(47,223)	16,357,267	424,108,359	11%	
2054	0.00%	4.00%	-	-	-	-	487,168,577	(745,605)	(1,095,072)	-	-	19,486,743	(36,814)	19,449,930	504,777,830	6%	
2059	0.00%	4.00%	-	-	-	-	583,153,676	(380,183)	(1,221,774)	-	-	23,326,147	(32,039)	23,294,108	604,845,827	3%	
2064	0.00%	4.00%	-	-	-	-	700,804,769	(174,262)	(1,386,475)	-	-	28,032,191	(31,215)	28,000,976	727,245,008	1%	
2069	0.00%	4.00%	-	-	-	-	843,854,473	(69,562)	(1,589,830)	-	-	33,754,179	(33,188)	33,720,991	875,916,072	1%	

