



GASB 74/75 ACTUARIAL VALUATION

Fiscal Year Ending December 31, 2021

CHARTER TOWNSHIP OF HIGHLAND

CONTACT

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April 14, 2022

**Tami Flowers
Charter Township of Highland
205 N John Street
Highland, MI 48357**

This report summarizes the GASB actuarial valuation for the Charter Township of Highland 2021 fiscal year. To the best of our knowledge, the report presents a fair position of the funded status of the plan in accordance with GASB Statement No. 74 (Financial Reporting for Post-Employment Benefit Plans Other Than Pension Plans) and GASB Statement No. 75 (Accounting and Financial Reporting by Employers for Post-Employment Benefits Other Than Pensions). This report may not be appropriate for other purposes. Please contact Nyhart prior to disclosing this report to any other party or relying on its content for any purpose other than that explained above. Failure to do so may result in misrepresentation or misinterpretation of this report.

The information presented herein is based on the actuarial assumptions and substantive plan provisions summarized in this report and participant information furnished to us by the Plan Sponsor. We have reviewed the employee census provided by the Plan Sponsor for reasonableness when compared to the prior information provided but have not audited the information at the source, and therefore do not accept responsibility for the accuracy or the completeness of the data on which the information is based. When relevant data may be missing, we may have made assumptions we feel are neutral or conservative to the purpose of the measurement. We are not aware of any significant issues with and have relied on the data provided.

The discount rate, other economic assumptions, and demographic assumptions have been selected by the Plan Sponsor with the concurrence of Nyhart. In our opinion, the actuarial assumptions are individually reasonable and in combination represent our estimate of anticipated experience of the Plan. All calculations have been made in accordance with generally accepted actuarial principles and practice.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following:

- plan experience differing from that anticipated by the economic or demographic assumptions;
- changes in economic or demographic assumptions;
- increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period); and
- changes in plan provisions or applicable law.

We did not perform an analysis of the potential range of future measurements due to the limited scope of our engagement.

To our knowledge, there have been no significant events prior to the current year's measurement date or as of the date of this report that could materially affect the results contained herein.



Neither Nyhart nor any of its employees has any relationship with the plan or its sponsor that could impair or appear to impair the objectivity of this report. Our professional work is in full compliance with the American Academy of Actuaries "Code of Professional Conduct" Precept 7 regarding conflict of interest. The undersigned meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Should you have any questions please do not hesitate to contact us.

A handwritten signature in black ink that reads "John Mallows".

John Mallows, FSA, MAAA
Actuary

A handwritten signature in black ink that reads "Jack Leemhuis".

Jack Leemhuis, ASA, MAAA
Actuary

Executive Summary

Charter Township of Highland GASB 74/75 Valuation for Fiscal Year Ending December 31, 2021

Summary of Results

Presented below is the summary of GASB 75 results for the fiscal year ending December 31, 2021 compared to the prior fiscal year as shown in the Township's Notes to Financial Statement.

| | As of December 31, 2018 | As of December 31, 2021 |
|----------------------------------|-------------------------|-------------------------|
| Total OPEB Liability | \$ 537,975 | \$ 498,677 |
| Actuarial Value of Assets | \$ (969,719) | \$ (937,259) |
| Net OPEB Liability | \$ (431,744) | \$ (438,582) |
| Funded Ratio | 180.3% | 187.9% |

| | FY 2018 | FY 2021 |
|--|-------------|-----------|
| OPEB Expense | \$ (10,552) | \$ 12,907 |
| Annual Employer Contributions | \$ 0 | \$ 0 |
| Actuarially Determined Contribution | \$ 0 | \$ 48,096 |

| | As of December 31, 2018 | As of December 31, 2021 |
|----------------------------------|-------------------------|-------------------------|
| Discount Rate | 5.50% | 5.50% |
| Expected Return on Assets | 5.50% | 5.50% |

| | As of December 31, 2021 |
|-----------------------------------|-------------------------|
| Total Active Participants | 4 |
| Total Retiree Participants | 13 |

The active participants' number above may include active employees who currently have no health care coverage. Refer to Summary of Participants section for an accurate breakdown of active employees with and without coverage.

* The Township did not report GASB 74/75 liabilities in their financial statements for FYE 12/31/2019 and 12/31/2020.

Executive Summary

Charter Township of Highland GASB 74/75 Valuation for Fiscal Year Ending December 31, 2021

Summary of Results

Below is a breakdown of total GASB 75 liabilities allocated to past and current service compared to the prior year. The table below also provides a breakdown of the Total OPEB Liability allocated to pre- and post- Medicare eligibility. The liability shown below includes explicit (if any) and implicit subsidies. Refer to the Substantive Plan Provisions section for complete information on the Plan Sponsor's GASB subsidies.

| Present Value of Future Benefits | As of December 31, 2018 | As of December 31, 2021 |
|---|-------------------------|-------------------------|
| Active Employees | \$ 122,366 | \$ 142,719 |
| Retired Employees | 429,932 | 370,207 |
| Total Present Value of Future Benefits | \$ 552,298 | \$ 512,926 |

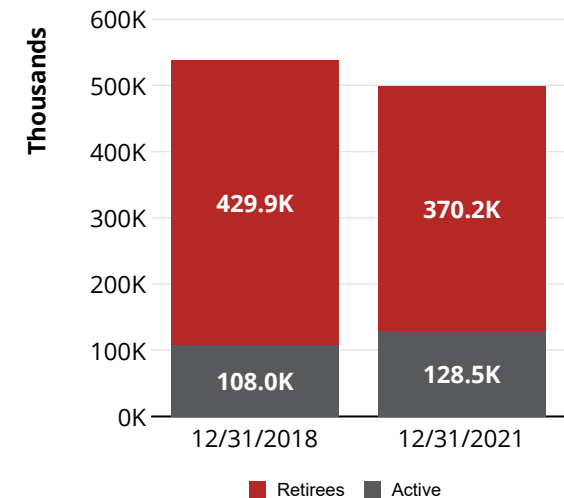
| Total OPEB Liability | As of December 31, 2018 | As of December 31, 2021 |
|----------------------|-------------------------|-------------------------|
| Active Pre-Medicare | \$ 27,421 | \$ 22,096 |
| Active Post-Medicare | 80,622 | 106,374 |
| Active Liability | \$ 108,043 | \$ 128,470 |

| | | |
|-----------------------|------------|------------|
| Retiree Pre-Medicare | \$ 0 | \$ 0 |
| Retiree Post-Medicare | 429,932 | 370,207 |
| Retiree Liability | \$ 429,932 | \$ 370,207 |

| | | |
|-----------------------------|-------------------|-------------------|
| Total OPEB Liability | \$ 537,975 | \$ 498,677 |
|-----------------------------|-------------------|-------------------|

| | As of December 31, 2018 | As of December 31, 2021 |
|---------------|-------------------------|-------------------------|
| Discount Rate | 5.50% | 5.50% |

Changes In Total OPEB Liability



Present Value of Future Benefits (PVFB) is the amount needed as of December 31, 2021 and December 31, 2018, to fully fund the Township's retiree health care subsidies for existing and future retirees and their dependents assuming all actuarial assumptions are met.

Total OPEB Liability is the portion of PVFB considered to be accrued or earned as of December 31, 2021 and December 31, 2018. This amount is a required disclosure in the Required Supplementary Information

* The Township did not report GASB 74/75 liabilities in their financial statements for FYE 12/31/2019 and 12/31/2020.

GASB Disclosures

Charter Township of Highland GASB 74/75 Valuation for Fiscal Year Ending December 31, 2021

Schedule of Changes in Net OPEB Liability and Related Ratios

| OPEB Liability | FY 2021 | FY 2018 | FY 2017 |
|--|---------------------|---------------------|---------------------|
| Total OPEB Liability | | | |
| Total OPEB Liability - beginning of year | \$ 502,001 | \$ 564,088 | \$ 832,564 |
| Service cost | 2,733 | 2,854 | 4,449 |
| Interest | 26,455 | 29,882 | 43,805 |
| Change of benefit terms | 0 | 0 | 0 |
| Changes in assumptions | 12,999 | (7,395) | (106,407) |
| Differences between expected and actual experience | 2,585 | (3,532) | (128,114) |
| Benefit payments | (48,096) | (47,922) | (82,209) |
| Net change in total OPEB liability | \$ (3,324) | \$ (26,113) | \$ (268,476) |
| Total OPEB Liability - end of year | \$ 498,677 | \$ 537,975 | \$ 564,088 |
| Plan Fiduciary Net Position | | | |
| Plan fiduciary net position - beginning of year | \$ 969,719 | \$ 1,043,064 | \$ 964,040 |
| Contributions - employer | 0 | 0 | 82,209 |
| Contributions - active employees | 0 | 0 | 0 |
| Net investment income | 37,399 | (16,406) | 87,691 |
| Benefit payments | (48,096) | (47,922) | (82,209) |
| Trust administrative expenses | (9,017) | (9,017) | (8,667) |
| Net change in plan fiduciary net position | \$ (19,714) | \$ (73,345) | \$ 79,024 |
| Plan fiduciary net position - end of year | \$ 937,259 | \$ 969,719 | \$ 1,043,064 |
| Net OPEB Liability - end of year | \$ (438,582) | \$ (431,744) | \$ (478,976) |
| Plan fiduciary net position as % of total OPEB liability | 187.9% | 180.3% | 184.9% |
| Covered employee payroll | \$ 272,387 | \$ 195,006 | \$ 187,958 |
| Net OPEB liability as % of covered payroll | -161.0% | -221.4% | -254.8% |

* The Township did not report GASB 74/75 liabilities in their financial statements for FYE 12/31/2019 and 12/31/2020.

GASB Disclosures

Charter Township of Highland GASB 74/75 Valuation for Fiscal Year Ending December 31, 2021

Schedule of Employer Contributions

The Actuarially Determined Contributions (ADC) shown below are based on the Annual Required Contribution (ARC) calculated in prior GASB 45 actuarial valuations as shown in the Township's financial statements.

| | FY 2021 | | FY 2018 | | FY 2017 | | FY 2016 | | FY 2015 | |
|---|---------|-----------|---------|---------|---------|----------|---------|----------|---------|----------|
| Actuarially Determined Contribution (ADC) | \$ | 48,096 | \$ | 0 | \$ | 0 | \$ | 18,522 | \$ | 22,795 |
| Contributions in relation to the ADC | | 0 | | 0 | | 82,209 | | 44,365 | | 69,923 |
| Contribution deficiency/(excess) | \$ | 48,096 | \$ | 0 | \$ | (82,209) | \$ | (25,843) | \$ | (47,128) |
| Covered employee payroll | \$ | 272,387 | \$ | 195,006 | \$ | 187,958 | \$ | 333,881 | \$ | 333,881 |
| Contribution as a % of covered payroll | | 0.0% | | 0.0% | | 43.7% | | 13.3% | | 20.9% |
| | FY 2014 | | FY 2013 | | FY 2012 | | FY 2011 | | FY 2010 | |
| Actuarially Determined Contribution (ADC) | \$ | 46,596 | \$ | 160,339 | \$ | 160,339 | \$ | 160,339 | \$ | 120,914 |
| Contributions in relation to the ADC | | 401,723 | | 149,688 | | 77,760 | | 77,760 | | 36,026 |
| Contribution deficiency/(excess) | \$ | (355,127) | \$ | 10,651 | \$ | 82,579 | \$ | 82,579 | \$ | 84,888 |
| Covered employee payroll | \$ | 415,651 | \$ | 415,651 | \$ | 883,822 | \$ | 883,822 | \$ | 883,822 |
| Contribution as a % of covered payroll | | 96.6% | | 36.0% | | 8.8% | | 8.8% | | 4.1% |

*The Township did not report GASB 74/75 liabilities in their financial statements for FYE 12/31/2019 and 12/31/2020.

GASB Disclosures

Charter Township of Highland GASB 74/75 Valuation for Fiscal Year Ending December 31, 2021

OPEB Expense

| OPEB Expense | | FY 2021 | | FY 2018 |
|---|----|----------|----|----------|
| Discount Rate | | | | |
| Beginning of year | | 5.50% | | 5.50% |
| End of year | | 5.50% | | 5.50% |
| Service cost | \$ | 2,733 | \$ | 2,854 |
| Interest | | 26,455 | | 29,882 |
| Change of benefit terms | | 0 | | 0 |
| Projected earnings on OPEB plan investments | | (51,084) | | (55,824) |
| Reduction for contributions from active employees | | 0 | | 0 |
| OPEB plan administrative expenses | | 9,017 | | 9,017 |
| Current period recognition of deferred outflows / (inflows) of resources | | | | |
| Differences between expected and actual experience | \$ | 2,585 | \$ | (3,532) |
| Changes in assumptions | | 12,999 | | (7,395) |
| Net difference between projected and actual earnings on OPEB plan investments | | 10,202 | | 14,446 |
| Total current period recognition | \$ | 25,786 | \$ | 3,519 |
| Total OPEB expense | \$ | 12,907 | \$ | (10,552) |

* The Township did not report GASB 74/75 liabilities in their financial statements for FYE 12/31/2019 and 12/31/2020.

GASB Disclosures

Charter Township of Highland GASB 74/75 Valuation for Fiscal Year Ending December 31, 2021

Deferred Outflows / (Inflows) of Resources

Deferred Outflows / (Inflows) of Resources represents the following items that have not been recognized in the OPEB Expense:

1. Differences between expected and actual experience of the OPEB plan
2. Changes of assumptions
3. Differences between projected and actual earnings in OPEB plan investments (for funded plans only)

The initial amortization period for the first two items noted above is based on expected future service lives while the difference between the projected and actual earnings in OPEB plan investment is amortized over five years. All balances are amortized linearly on a principal only basis and new bases will be created annually for each of the items above.

| Differences between expected and actual experience for FYE | Initial Balance | Initial Amortization Period | Annual Recognition | Unamortized Balance as of December 31, 2021 |
|--|-----------------|-----------------------------|--------------------|---|
| December 31, 2017 | \$ (128,114) | 1 | \$ 0 | \$ 0 |
| December 31, 2018 | \$ (3,532) | 1 | \$ 0 | \$ 0 |
| December 31, 2021 | \$ 2,585 | 1 | \$ 2,585 | \$ 0 |

| Changes in assumptions for FYE | Initial Balance | Initial Amortization Period | Annual Recognition | Unamortized Balance as of December 31, 2021 |
|--------------------------------|-----------------|-----------------------------|--------------------|---|
| December 31, 2017 | \$ (106,407) | 1 | \$ 0 | \$ 0 |
| December 31, 2018 | \$ (7,395) | 1 | \$ 0 | \$ 0 |
| December 31, 2021 | \$ 12,999 | 1 | \$ 12,999 | \$ 0 |

| Net Difference between projected and actual earnings in OPEB plan investments for FYE | Initial Balance | Initial Amortization Period | Annual Recognition | Unamortized Balance as of December 31, 2021 |
|---|-----------------|-----------------------------|--------------------|---|
| December 31, 2017 | \$ (34,904) | 5 | \$ (6,981) | \$ (6,980) |
| December 31, 2018 | \$ 72,230 | 5 | \$ 14,446 | \$ 14,446 |
| December 31, 2021 | \$ 13,685 | 5 | \$ 2,737 | \$ 10,948 |

* The Township did not report GASB 74/75 liabilities in their financial statements for FYE 12/31/2019 and 12/31/2020.

GASB Disclosures

Charter Township of Highland GASB 74/75 Valuation for Fiscal Year Ending December 31, 2021

Deferred Outflows / (Inflows) of Resources (Continued)

| As of fiscal year ending December 31, 2021 | Deferred Outflows | Deferred Inflows |
|---|-------------------|------------------|
| Differences between expected and actual experience | \$ 0 | \$ 0 |
| Changes in assumptions | 0 | 0 |
| Net difference between projected and actual earnings in OPEB plan investments | 18,414 | 0 |
| Total | \$ 18,414 | \$ 0 |

Annual Amortization of Deferred Outflows / (Inflows)

The balances as of December 31, 2021 of the deferred outflows / (inflows) of resources will be recognized in OPEB expense in the future fiscal years as noted below.

| FYE | Balance |
|------------|-----------|
| 2022 | \$ 10,203 |
| 2023 | \$ 2,737 |
| 2024 | \$ 2,737 |
| 2025 | \$ 2,737 |
| 2026 | \$ 0 |
| Thereafter | \$ 0 |

* The Township did not report GASB 74/75 liabilities in their financial statements for FYE 12/31/2019 and 12/31/2020.

GASB Disclosures

Charter Township of Highland GASB 74/75 Valuation for Fiscal Year Ending December 31, 2021

Sensitivity Results

The following presents the Net OPEB Liability as of December 31, 2021, calculated using the discount rate assumed and what it would be using a 1% higher and 1% lower discount rate.

- The current discount rate is 5.50%.
- The 1% decrease in discount rate would be 4.50%.
- The 1% increase in discount rate would be 6.50%.

| As of December 31, 2021 | Net OPEB Liability |
|-------------------------|--------------------|
| 1% Decrease | \$ (377,811) |
| Current Discount Rate | \$ (438,582) |
| 1% Increase | \$ (464,320) |

The following presents the Net OPEB Liability as of December 31, 2021, using the health care trend rates assumed and what it would be using 1% higher and 1% lower health care trend rates.

- The current health care trend rate starts at an initial rate of 7.50%, decreasing to an ultimate rate of 4.50%.
- The 1% decrease in health care trend rates would assume an initial rate of 6.50%, decreasing to an ultimate rate of 3.50%.
- The 1% increase in health care trend rates would assume an initial rate of 8.50%, decreasing to an ultimate rate of 5.50%.

| As of December 31, 2021 | Net OPEB Liability |
|-------------------------|--------------------|
| 1% Decrease | \$ (392,146) |
| Current Trend Rates | \$ (438,582) |
| 1% Increase | \$ (452,269) |

GASB Disclosures

Charter Township of Highland GASB 74/75 Valuation for Fiscal Year Ending December 31, 2021

Asset Information

| Asset Breakdown | | FY 2018 | | FY 2021 |
|--|-----------|----------------|-----------|----------------|
| Assets | | | | |
| Cash and deposits | \$ | 119,996 | \$ | 15,986 |
| Securities lending cash collateral | | 0 | | 0 |
| Total cash | \$ | 119,996 | \$ | 15,986 |
| Receivables | | | | |
| Contributions | \$ | 0 | \$ | 0 |
| Accrued interest | | 0 | | 0 |
| Total receivables | \$ | 0 | \$ | 0 |
| Investments | | | | |
| Fixed income | \$ | 141,439 | \$ | 0 |
| Equities | | 33,389 | | 0 |
| Mutual Funds | | 674,895 | | 921,273 |
| Total investments | \$ | 849,723 | \$ | 921,273 |
| Total Assets | \$ | 969,719 | \$ | 937,259 |
| Liabilities | | | | |
| Payables | | | | |
| Investment management fees | \$ | 0 | \$ | 0 |
| Securities lending expense | | 0 | | 0 |
| Total liabilities | \$ | 0 | \$ | 0 |
| Net Position Restricted to OPEB | \$ | 969,719 | \$ | 937,259 |

* Amounts in individual asset classes for FY 2018 are estimated based on the total value of assets at December 31, 2018 and the asset allocation at December 31, 2017.

GASB Disclosures

Charter Township of Highland GASB 74/75 Valuation for Fiscal Year Ending December 31, 2021

Asset Information (Continued)

| Asset Reconciliation | FY 2018 | FY 2021 |
|--|--------------|-------------|
| Additions | | |
| Contributions Received | | |
| Employer | \$ 0 | \$ 0 |
| Active employees | 0 | 0 |
| Total contributions | \$ 0 | \$ 0 |
| Investment Income | | |
| Net increase in fair value of investments | \$ (45,204) | \$ (13,685) |
| Interest and dividends | 28,798 | 154,309 |
| Investment expense, other than from securities lending | 0 | 0 |
| Securities lending income | 0 | 0 |
| Securities lending expense | 0 | 0 |
| Net investment income | \$ (16,406) | \$ 140,624 |
| Total additions | \$ (16,406) | \$ 140,624 |
| Deductions | | |
| Benefit payments | \$ 47,922 | \$ 146,033 |
| Administrative expenses | 9,017 | 9,017 |
| Other | 0 | 0 |
| Total deductions | \$ 56,939 | \$ 173,084 |
| Net increase in net position | \$ (73,345) | \$ (32,460) |
| Net position restricted to OPEB | | |
| Beginning of year | \$ 1,043,064 | \$ 969,719 |
| End of year | \$ 969,719 | \$ 937,259 |

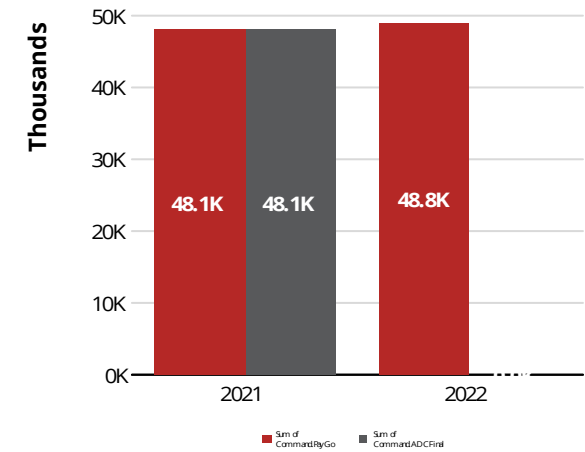
* Amounts in individual asset classes for FY 2018 are estimated based on the total value of assets at December 31, 2018 and the asset allocation at December 31, 2017.

Actuarially Determined Contributions

Charter Township of Highland GASB 74/75 Valuation For Fiscal Year Ending December 31, 2021

| | FY 2021 | | FY 2022 | |
|---|-----------|---------------------------------------|-----------|---------------------------------------|
| Discount rate (Funding) | | 5.50% | | 5.50% |
| Payroll growth factor used for amortization | | N/A | | N/A |
| Actuarial cost method | | Entry Age Normal Level % of Salary | | Entry Age Normal Level % of Salary |
| Amortization type | | Level Dollar | | Level Dollar |
| Amortization period (years) | | 16 | | 15 |
| Actuarial Accrued Liability (AAL) - beginning of year | \$ | 502,001 | \$ | 498,677 |
| Actuarial Value of Assets (AVA) - beginning of year | | (956,973) | | (950,944) |
| Unfunded AAL - beginning of year | \$ | (454,972) | \$ | (452,267) |
| Normal Cost | \$ | 2,733 | \$ | 2,835 |
| Amortization of Unfunded AAL | | (41,220) | | (42,708) |
| Total normal cost plus amortization | \$ | (38,487) | \$ | (39,873) |
| Interest to end of year | | (2,117) | | (2,193) |
| Actuarially Determined Contribution - Preliminary | \$ | (40,604) | \$ | (42,066) |
| Expected Benefit Payments | | 48,096 | | 43,882 |
| Actuarially Determined Contribution - Final | \$ | 48,096 | \$ | 0 |

Cash Vs Accrual Accounting



Actuarially Determined Contribution (ADC) is the target or recommended contribution to a defined benefit OPEB plan, which if paid on an ongoing basis, will provide sufficient resources to fund future costs for services to be earned and liabilities attributed to past services. This is typically higher than the pay-as-you-go cost because it includes recognition of employer costs expected to be paid in future accounting periods.

* The Actuarially Determined Contribution is set to be no less than \$0. Due to the funded status of the plan, no contribution to the Trust is required.

Projection of GASB Disclosures

Charter Township of Highland GASB 74/75 Valuation for Fiscal Year Ending December 31, 2021

The Total OPEB Liability (TOL) is expected to change on an annual basis as a result of expected and unexpected events. Under normal circumstances, it is generally expected to have a net increase each year. Below is a list of the most common events affecting the total OPEB liability and whether they increase or decrease the liability.

Expected Events

- Increases in TOL due to additional benefit accruals as employees continue to earn service each year
- Increases in TOL due to interest as the employees and retirees age
- Decreases in TOL due to benefit payments

Unexpected Events

- Increases in TOL when actual premium rates increase more than expected. A liability decrease occurs when the reverse happens.
- Increases in TOL when more new retirements occur than expected or fewer terminations occur than anticipated. Liability decreases occur when the opposite outcomes happen.
- Increases or decreases in TOL depending on whether benefits are improved or reduced.

| Projection of Total OPEB Liability (TOL) | FY 2021 | FY 2022 |
|--|-------------------|---------------|
| TOL as of beginning of year | \$ 502,001 | \$ 498,677 |
| Normal cost as of beginning of year | 2,733 | 3,185 |
| Exp. benefit payments during the year | (48,096) | (43,882) |
| Interest adjustment to end of year | 28,434 | 26,412 |
| Exp. TOL as of end of year | \$ 521,046 | \$ 484,392 |
| Actuarial Loss / (Gain) | (22,369) | TBD |
| Actual TOL as of end of year | \$ 498,677 | \$ TBD |

| | | |
|---------------------------------------|-------|-------|
| Discount rate as of beginning of year | 5.50% | 5.50% |
| Discount rate as of end of year | 5.50% | TBD |

| Projection of Actuarial Value of Assets (AVA) | FY 2021 | FY 2022 |
|--|-------------------|---------------|
| AVA as of beginning of year | \$ 969,719 | \$ 937,259 |
| Exp. employer contributions during the year | 146,033 | 48,832 |
| Exp. benefit payments during the year | (48,096) | (43,882) |
| Expected investment income | 53,090 | 51,549 |
| Exp. Trust administrative expenses | (9,017) | 0 |
| Exp. AVA as of end of year | \$ 1,013,792 | \$ 988,808 |
| Differences between expected and actual experience | (76,533) | TBD |
| AVA as of end of year | \$ 937,259 | \$ TBD |

| | | |
|---|-------|-------|
| Expected asset return as of beginning of year | 5.50% | 5.50% |
| Expected asset return as of end of year | 5.50% | TBD |

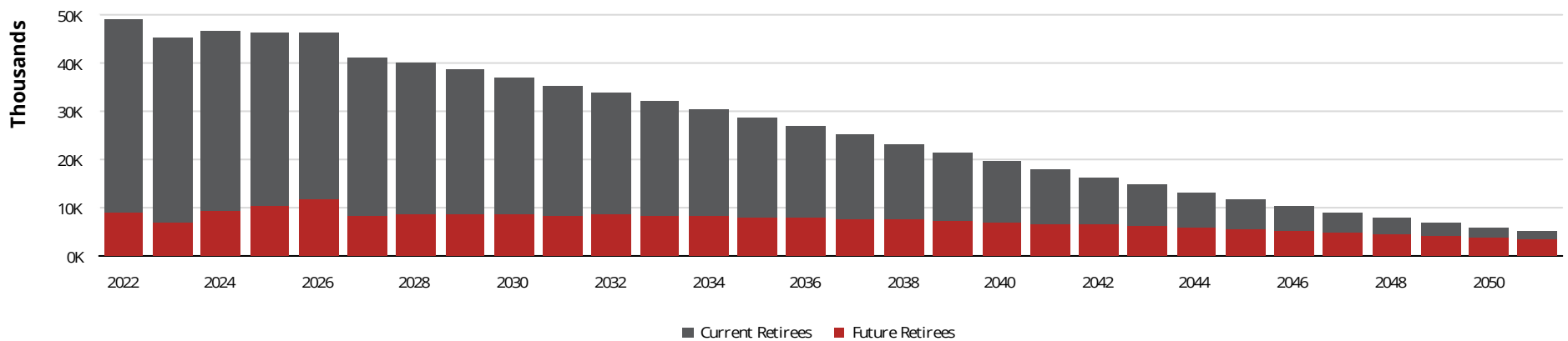
Cash Flow Projections

Charter Township of Highland GASB 74/75 Valuation for Fiscal Year Ending December 31, 2021

The below projections show the actuarially estimated employer-paid contributions for retiree health benefits for the next thirty years. Results are shown separately for a closed group of current/future retirees. These projections include explicit and implicit subsidies.

| FYE | Current Retirees | Future Retirees* | Total | FYE | Current Retirees | Future Retirees* | Total | FYE | Current Retirees | Future Retirees* | Total |
|------|------------------|------------------|-----------|------|------------------|------------------|-----------|------|------------------|------------------|-----------|
| 2022 | \$ 39,936 | \$ 8,897 | \$ 48,833 | 2032 | \$ 25,340 | \$ 8,550 | \$ 33,890 | 2042 | \$ 9,895 | \$ 6,437 | \$ 16,332 |
| 2023 | \$ 38,532 | \$ 6,756 | \$ 45,288 | 2033 | \$ 23,769 | \$ 8,397 | \$ 32,166 | 2043 | \$ 8,591 | \$ 6,141 | \$ 14,732 |
| 2024 | \$ 37,122 | \$ 9,345 | \$ 46,467 | 2034 | \$ 22,179 | \$ 8,234 | \$ 30,413 | 2044 | \$ 7,377 | \$ 5,827 | \$ 13,204 |
| 2025 | \$ 35,703 | \$ 10,461 | \$ 46,164 | 2035 | \$ 20,577 | \$ 8,059 | \$ 28,636 | 2045 | \$ 6,260 | \$ 5,498 | \$ 11,758 |
| 2026 | \$ 34,275 | \$ 11,855 | \$ 46,130 | 2036 | \$ 18,973 | \$ 7,872 | \$ 26,845 | 2046 | \$ 5,246 | \$ 5,153 | \$ 10,399 |
| 2027 | \$ 32,836 | \$ 8,105 | \$ 40,941 | 2037 | \$ 17,375 | \$ 7,671 | \$ 25,046 | 2047 | \$ 4,340 | \$ 4,795 | \$ 9,135 |
| 2028 | \$ 31,380 | \$ 8,633 | \$ 40,013 | 2038 | \$ 15,794 | \$ 7,456 | \$ 23,250 | 2048 | \$ 3,539 | \$ 4,427 | \$ 7,966 |
| 2029 | \$ 29,906 | \$ 8,564 | \$ 38,470 | 2039 | \$ 14,241 | \$ 7,225 | \$ 21,466 | 2049 | \$ 2,842 | \$ 4,053 | \$ 6,895 |
| 2030 | \$ 28,409 | \$ 8,482 | \$ 36,891 | 2040 | \$ 12,731 | \$ 6,979 | \$ 19,710 | 2050 | \$ 2,245 | \$ 3,677 | \$ 5,922 |
| 2031 | \$ 26,887 | \$ 8,386 | \$ 35,273 | 2041 | \$ 11,278 | \$ 6,717 | \$ 17,995 | 2051 | \$ 1,743 | \$ 3,303 | \$ 5,046 |

Projected Employer Pay-go Cost



* Projections for future retirees do not take into account future new hires.

Discussion of Discount Rates

Charter Township of Highland GASB 74/75 Valuation for Fiscal Year Ending December 31, 2021

Under GASB 74, the discount rate used in valuing OPEB liabilities for funded plans as of the Measurement Date must be based on the long-term expected rate of return on OPEB plan investments that are expected to be used to finance future benefit payments to the extent that (a) they are sufficient to pay for the projected benefit payments and (b) the OPEB plan assets are invested using a strategy that will achieve that return. When the OPEB plan investments are insufficient to cover future benefit payments, a yield for 20-year tax-exempt general obligation municipal bonds with an average rating of AA /Aa or higher (or equivalent quality on another rating scale) must be used.

For the current valuation:

1. The long-term expected rate of return on OPEB plan investment is assumed to be 5.50%. The prior valuation assumed 5.50%. This was determined using a building block method in which expected future real rates of return (expected returns, net of OPEB plan investment expense and inflation) are developed for each major asset class. These expected future real rates of return are then combined to produce the long-term expected rate of return by weighting them based on the target asset allocation percentage and adding in expected inflation (2.50%). The best estimates of arithmetic real rates of return for each major asset class included in the OPEB Plan's target asset allocation as of December 31, 2021 are summarized in the following table.

| Asset Class | Target Allocation | L/T Expected Real ROR |
|-------------------------|-------------------|-----------------------|
| Cash / Money Market | 5.00% | 1.50% |
| CD-Structured Products | 15.00% | 4.50% |
| Alternative Investments | 10.00% | 5.50% |
| Mutual Fund ETF | 70.00% | 6.00% |
| Total | 100.00% | 5.50% |

2. The discount rate used when the OPEB plan investments are insufficient to pay for future benefit payments are selected from the range of indices as shown in the table below, where the range is given as the spread between the lowest and highest rate shown.

| Yield as of | January 1, 2021 | December 31, 2021 |
|--|----------------------|----------------------|
| Bond Buyer Go 20-Bond Municipal Bond Index | 2.12% | 2.05% |
| S&P Municipal Bond 20-Year High Grade Rate Index | 1.93% | 2.25% |
| Fidelity 20-Year Go Municipal Bond Index | 2.00% | 1.84% |
| Bond Index Range | 1.93% - 2.12% | 1.84% - 2.25% |

3. The final equivalent single discount rate used for this year's valuation is 5.50%. The Charter Township of Highland's funding policy is to contribute the Actuarial Determined Contribution annually and the OPEB Trust is expected to be sufficient to pay for all future benefit payments.

Summary of Plan Participants

Charter Township of Highland GASB 74/75 Valuation for Fiscal Year Ending December 31, 2021

Active Employees

| Actives with coverage | Single ¹ | Non-Single | Total | Avg. Age | Avg. Svc | Salary |
|------------------------------------|---------------------|------------|----------|-----------|-----------|-------------------|
| Total actives with coverage | 4 | 0 | 4 | 60 | 26 | \$ 272,387 |

Spouses are not allowed to enroll in the plan upon retirement.

In addition to the employees above, there are 23 employees who were hired or rehired as full time on/after January 1, 2008 and are not eligible for retiree health benefits. They have been excluded from the valuation.

Active Age-Service Distribution

Including those eligible for retiree health benefits only.

| Age | Years of Service | | | | | | | | | | Total |
|--------------|------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| | < 1 | 1 to 4 | 5 to 9 | 10 to 14 | 15 to 19 | 20 to 24 | 25 to 29 | 30 to 34 | 35 to 39 | 40 & up | |
| Under 25 | | | | | | | | | | | 0 |
| 25 to 29 | | | | | | | | | | | 0 |
| 30 to 34 | | | | | | | | | | | 0 |
| 35 to 39 | | | | | | | | | | | 0 |
| 40 to 44 | | | | | | | | | | | 0 |
| 45 to 49 | | | | | 1 | | | | | | 1 |
| 50 to 54 | | | | | | | | | | | 0 |
| 55 to 59 | | | | | | 1 | | | | | 1 |
| 60 to 64 | | | | | | | | | | 1 | 1 |
| 65 to 69 | | | | | | 1 | | | | | 1 |
| 70 & up | | | | | | | | | | | 0 |
| Total | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 1 | 4 |

¹ Includes participants electing employee only and employee/child(ren) coverage levels.

Summary of Plan Participants

Charter Township of Highland GASB 74/75 Valuation for Fiscal Year Ending December 31, 2021

Retirees

| Retirees with coverage | Single ² | Non-Single | Total | Avg. Age |
|-------------------------------------|---------------------|------------|----------|-------------|
| Total retirees with coverage | 9 | 0 | 9 | 77.6 |

In addition to the retirees above, there are 4 retirees who are currently receiving the buyout benefit. They have been included in the valuation.

Retiree Age Distribution³

| Age | Retirees |
|--------------|-----------|
| < 45 | |
| 45 to 49 | |
| 50 to 54 | |
| 55 to 59 | |
| 60 to 64 | |
| 65 to 69 | 2 |
| 70 to 74 | 4 |
| 75 to 79 | 3 |
| 80 to 84 | 3 |
| 85 to 89 | |
| 90 & up | 1 |
| Total | 13 |

² Includes participants electing employee only and employee/child(ren) coverage levels.

³ Includes retirees who are currently receiving buyout benefit.

Substantive Plan Provisions

Charter Township of Highland GASB 74/75 Valuation for Fiscal Year Ending December 31, 2021

Eligibility

Employees hired before January 1, 2008 are eligible for retiree health benefits once when they attain age 60 and have at least 10 years of service. Employees who did not maintain full time status since this date lost the eligibility for retiree health coverage.

Employees hired on/after January 1, 2008 are not eligible for retiree health benefits.

Spouse Benefit

Spouses of retirees are not eligible to enroll in the health plans.

Medical and Vision Benefits

Same pre-Medicare benefits are available to retirees as active employees. The plan is fully-insured and premiums vary by age. Premiums effective January 1, 2022 from age 60 to age 64 are as follows. Refer to the appendix for a summary of the pre-Medicare medical/rx plan. Medical/Rx and vision coverage is bundled; there is no option to enroll in one and not the other.

| Age | Single Coverage | | |
|-----|-----------------|--------|----------|
| | Medical/Rx | Vision | Total |
| 60 | \$655.81 | \$6.16 | \$661.97 |
| 61 | 679.01 | 6.12 | 685.13 |
| 62 | 694.23 | 6.07 | 700.30 |
| 63 | 713.32 | 6.01 | 719.33 |
| 64 | 724.92 | 5.94 | 730.86 |

For retirees age 65 and older, there is no health care coverage provided by the Township, instead the Township will provide a reimbursement of up to \$450 per month for the cost of any Medicare supplement coverage obtained elsewhere. For vision expenses, the Township will reimburse up to \$300 per year after documentation is provided. These amounts will be pro-rated based on the month the retiree reaches 65.

Dental

No subsidized dental benefit is provided to retirees under the age of 65. Retirees age 65 and older (including those who are receiving buyout benefits) will be reimbursed up to \$1,000 for dental expenses per year after documentation is provided. These amounts will be pro-rated based on the month they reach age 65.

Substantive Plan Provisions

Charter Township of Highland GASB 74/75 Valuation for Fiscal Year Ending December 31, 2021

Buy-out In lieu of health benefits, other than dental, any qualified retiree electing not to take the Township's health care coverage or reimbursement for a period of one year starting in January is eligible to receive a buy-out of \$2,000 for single coverage. The buy-out payment will be made in December. Re-enrollment in Township's health plans is allowed, which would result in the buyout being prorated.

Explicit Subsidy For retirees between the ages of 60 and 65, the Township agrees to pay a percentage of the cost of single coverage towards available retiree health benefits for each retiree that qualifies based on the following scale, to be reviewed annually.

| YOS at Retirement | % Paid by Township |
|--------------------------|---------------------------|
| 10 | 70% |
| 11 | 73% |
| 12 | 76% |
| 13 | 79% |
| 14 | 82% |
| 15 | 85% |
| 16 | 88% |
| 17 | 91% |
| 18 | 94% |
| 19 | 97% |
| 20 | 100% |

For all other benefits, the Township may reimburse costs up to the specified limit as specified in the sections above.

Retiree Cost Sharing Retirees contribute the portion not covered by the explicit subsidy above for health care coverage prior to age 65. No contribution is required once retirees turn 65.

Actuarial Methods and Assumptions

Charter Township of Highland GASB 74/75 Valuation for Fiscal Year Ending December 31, 2021

The actuarial assumptions used in this report represent a reasonable long-term expectation of future OPEB outcomes. As national economic and Township experience change over time, the assumptions will be tested for ongoing reasonableness and, if necessary, updated.

There are changes to the actuarial methods and assumptions since the last full GASB valuation, which was for the fiscal year ending December 31, 2017. Refer to the Actuary's Notes section for complete information on these changes. For the current year full GASB valuation, we have also updated the per capita costs. We expect to update the discount rate, health care trend rates, mortality tables, and per capita costs again in the next full GASB valuation, which will be for the fiscal year ending December 31, 2023.

Measurement Date

For the fiscal year ending December 31, 2021, a December 31, 2021 measurement date was used.

Actuarial Valuation Date

December 31, 2021 with no adjustments to get to the December 31, 2021 measurement date. Liabilities as of January 1, 2021 are based on an actuarial valuation date of January 1, 2018 projected to January 1, 2021 on a "no loss / no gain" basis.

Discount Rate

5.50% as of January 1, 2021 and 5.50% as of December 31, 2021 for accounting disclosure purposes.
5.50% as of January 1, 2021 and 5.50% as of December 31, 2021 for funding disclosure purposes (in calculating the Actuarially Determined Contribution).
Refer to the Discussion of Discount Rates section for more information on selection of the discount rate.

Payroll Growth

3.00% general payroll growth assumption, plus merit increase rates as shown below. Payroll growth is based on the Michigan Employees Retirement System (MERS) actuarial valuation as of December 31, 2021.

| YOS | Merit |
|-----|-------|
| 0 | 6.70% |
| 5 | 1.90% |
| 10 | 1.10% |
| 15 | 0.70% |
| 20 | 0.60% |
| 25 | 0.40% |
| 30 | 0.20% |
| 35 | 0.10% |
| 40+ | 0.00% |

Inflation Rate

2.50% per year

Actuarial Methods and Assumptions

Charter Township of Highland GASB 74/75 Valuation for Fiscal Year Ending December 31, 2021

Cost Method

Allocation of Actuarial Present Value of Future Benefits for services prior and after the Measurement Date was determined using the Entry Age Normal Level % of Salary method where:

- Service Cost for each individual participant, payable from date of employment to date of retirement, is sufficient to pay for the participant's benefit at retirement; and
- Annual Service Cost is a constant percentage of the participant's salary that is assumed to increase according to the Payroll Growth.

Employer Funding Policy

The funding policy is to contribute the Actuarial Determined Contribution annually.

Census Data

Census information was provided by the Township in January 2022. We have reviewed it for reasonableness, and no material modifications were made to the census data.

Experience Study

Best actuarial practices call for a periodic assumption review, and Nyhart recommends the Township to complete an actuarial assumption review (also referred to as an experience study) in the future.

Health Care Coverage Election Rate

Active employees with current coverage: 100% of eligible will use a portion of benefits, as specified in the Per Capita Costs section.

Active employees with no coverage: 0%

Inactive employees with current coverage: 100% of eligible will use a portion of benefits, as specified in the Per Capita Costs section.

Inactive employees with no coverage: 0%

Spousal Coverage

Not applicable

Mortality

General Employees and Retirees: SOA Pub-2010 General Headcount Weighted Mortality Table fully generational using Scale MP-2021

Surviving Spouses: SOA Pub-2010 Contingent Survivor Headcount Weighted Mortality Table fully generational using Scale MP-2021

Disability

None

Actuarial Methods and Assumptions

Charter Township of Highland GASB 74/75 Valuation for Fiscal Year Ending December 31, 2021

Turnover Rate

Assumption used to project terminations (voluntary and involuntary) prior to meeting minimum retirement eligibility for retiree health coverage. The rates represent the probability of termination in the next 12 months. The termination rates are based on the MERS actuarial valuation as of December 31, 2021. Sample annual turnover rates are as shown below:

| YOS | Rate |
|------------|-------------|
| 0 | 23.4% |
| 5 | 8.3% |
| 10 | 5.4% |
| 15 | 4.0% |
| 20 | 3.1% |
| 25+ | 2.6% |

Retirement Rate

Annual rates of retirement are as shown below, which is based on the historical retirement experience through December 31, 2017.

| Age | Rate |
|------------|-------------|
| 60 - 61 | 10% |
| 62 | 30% |
| 63 - 64 | 15% |
| 65 - 66 | 40% |
| 67 - 69 | 10% |
| 70 | 100% |

Actuarial Methods and Assumptions

Charter Township of Highland GASB 74/75 Valuation for Fiscal Year Ending December 31, 2021

Health Care Trend Rates

| FYE | Medical/Rx | Vision |
|-------|------------|--------|
| 2022 | 7.50% | 4.00% |
| 2023 | 7.00% | 3.75% |
| 2024 | 6.50% | 3.50% |
| 2025 | 6.00% | 3.25% |
| 2026 | 5.50% | 3.00% |
| 2027 | 5.00% | 3.00% |
| 2028+ | 4.50% | 3.00% |

The initial trend rate was based on a combination of employer history, national trend surveys, and professional judgment.

The ultimate trend rate was selected based on historical medical CPI information.

Health Care Trend Rates apply to pre-65 benefits only. Post-65 reimbursement amounts are assumed to remain constant, so is the buyout benefit.

Retiree Contributions

Retiree contributions are assumed to increase according to health care trend rates.

Per Capita Costs

Annual per capita costs are based on the 2022 premium rates by age. The costs are assumed to increase with health care trend rates. Annual per capita costs are as shown below:

| Age | Medical/Rx | Vision |
|-----|------------|--------|
| 60 | \$7,870 | 74 |
| 61 | 8,148 | 73 |
| 62 | 8,331 | 73 |
| 63 | 8,560 | 72 |
| 64 | 8,699 | 71 |

The per capita costs represent the cost of coverage for a retiree-only population.

Actuarial standards require the recognition of higher inherent costs for a retired population versus an active population.

For retirees over the age of 65, the assumed utilization of reimbursement benefit provided by the Township is as follows:

- 50% for medical/rx – equivalent to \$2,700 reimbursement annually
- 50% for dental – equivalent to \$500 reimbursement annually
- 60% for vision – equivalent to \$180 reimbursement annually

Neither the maximum reimbursement amounts, nor the portion that retirees use, is assumed to increase in the future

Actuarial Methods and Assumptions

Charter Township of Highland GASB 74/75 Valuation for Fiscal Year Ending December 31, 2021

Explicit Subsidy

The difference between (a) the premium rate and (b) the retiree contribution. Below is an example of the monthly explicit subsidies for a future retiree age 64 retiring with TEN years of service and is enrolled in the medical/rx/vision plan. Numbers below do not include dental benefits.

| | Premium Rate | Retiree Contribution | Explicit Subsidy |
|---------|-------------------------|---------------------------------|-----------------------------|
| | A | B | C = A - B |
| Retiree | \$730.86 | \$511.60 | \$219.00 |

Implicit Subsidy

The Township's premium rates vary by age and are assumed to be representative of retiree costs. Therefore, there is no implicit subsidy.

APPENDIX

The background features a complex geometric design. It consists of several overlapping, semi-transparent shapes. A large, dark gray shape occupies the upper portion of the frame. Below it, there are various shapes in lighter shades of gray and white, some of which are defined by dashed lines. A prominent, solid red shape is located in the lower right corner, extending towards the center. The overall composition is clean and modern, with a focus on geometric forms and color contrast.

Appendix

Charter Township of Highland GASB 74/75 Valuation for Fiscal Year Ending December 31, 2021

Comparison of Participant Demographic Information

The active participants' number below may include active employees who currently have no health care coverage. Refer to the Summary of Participants section for an accurate breakdown of active employees with and without coverage.

| | As of December 31, 2017 | As of December 31, 2021 |
|-----------------------|-------------------------|-------------------------|
| Active Participants | 3 | 4 |
| Retired Participants | 15 | 13 |
| Averages for Active | | |
| Age | 59.3 | 60 |
| Service | 24.1 | 26 |
| Averages for Inactive | | |
| Age | 73.1 | 76.0 |

Appendix

Charter Township of Highland GASB 74/75 Valuation for Fiscal Year Ending December 31, 2021

Detailed Actuary's Notes

There were no substantive plan provision changes since the last full valuation, which was for the fiscal year ending December 31, 2017.

The following assumptions have been updated since the prior valuation:

1. The mortality table has been updated from the SOA RPH-2018 Total Dataset Mortality Table fully generational using Scale MP-2018 to:
 - a. General Employees and Retirees: SOA Pub-2010 General Headcount Weighted Mortality Table fully generational using Scale MP-2020
 - b. Public Safety Employees and Retirees: SOA Pub-2010 Public Safety Headcount Weighted Mortality Table fully generational using Scale MP-2020
 - c. Surviving Spouses: SOA Pub-2010 Contingent Survivor Headcount Weighted Mortality Table fully generational using Scale MP-2020

This change caused an increase of in the Township's liabilities.

2. Health care trend rates for medical/rx costs have been set to an initial rate of 7.5% decreasing by 0.5% annually to an ultimate rate of 4.5%. Health care trend rates for vision costs they have been set to a constant rate of 4.0% per year decreasing by 0.5% annually to an ultimate rate of 3.0%.

This change caused a slight increase of in The township's liabilities.

3. General payroll growth assumption, plus merit increase rates were updated. Payroll growth is based on the Michigan Employees Retirement System (MERS) actuarial valuation as of December 31, 2021

This change caused a slight increase of in the Township's liabilities.

4. The turnover rates were updated. These rates are based on the Michigan Employees Retirement System (MERS) actuarial valuation as of December 31, 2021

This change caused a slight increase of in the Township's liabilities.

Appendix

Charter Township of Highland GASB 74/75 Valuation for Fiscal Year Ending December 31, 2021

Summary of Medical Benefits

A brief summary of the health plan offered by the Township effective on January 1, 2022 is as shown below. The out-of-pocket maximum includes the deductible, coinsurance, and copayments.

| | BCN HRA HMO Platinum \$5000 VA |
|---------------------------------------|-----------------------------------|
| Deductible (EE / EE + Sp) | \$5,000 / \$10,000 |
| Coinsurance (Township portion) | 80% |
| Out-of-Pocket Maximum (EE / EE + Sp) | \$6,350 / \$12,700 |
| Co-pay / co-insurances for: | |
| Primary Care Office Visit | \$20 |
| Urgent Care | \$50 |
| Emergency Room | \$150 |
| Prescription drugs | |
| Retail (Generic / Pref / Non-Pref) | TBD |
| Mail Order (Generic/ Pref / Non-Pref) | TBD |

Appendix

Charter Township of Highland GASB 74/75 Valuation for Fiscal Year Ending December 31, 2021

PA 202 Uniform Assumption Disclosures

The information presented below is for the purposes of filing Form No. 5572 under PA 202 uniform assumption requirements. Per regulation, Form No. 5572 must be filed no later than six months after the end of the fiscal year. Governmental fund revenues are not shown below and should not be determined by the Township. Refer to the Michigan Department of Treasury website for additional information.

| Form 5572 Line | Description | Charter Township of Highland |
|----------------|---|------------------------------|
| Line 28 | Actuarial Value of Assets | \$ 937,259 |
| Line 29 | Actuarial Accrued Liability | \$ 490,508 |
| Line 31 | Actuarially Determined Contribution for FY 2021 | \$ 0 |

Line 31 (Actuarially Determined Contribution) was calculated using level dollar amortization with a 5.50% discount rate. The amortization period is a closed, 20-year period with 16 years remaining for FY 2021.

Under PA 202 requirements, uniform assumption setting is mandated in reporting of liabilities, assets, and ADCs. The following is a description of the PA 202 uniform assumption guidance and final assumptions used for the Township for purposes of calculating the figures above.

| Assumption | Uniform Assumption Guidance | Township Assumption |
|---------------------------|---|--|
| Investment Rate of Return | Maximum of 7.00% | 5.50% for funding/ADC purposes) |
| Discount Rate | Blended discount rate calculated per GASB 74/75: <ul style="list-style-type: none"> • Maximum of 7.0% where plan assets are sufficient to make projected benefit payments • 2.2% for periods where assets are insufficient to make projected benefit payments | 5.50% (for calculation of the OPEB liability as of December 31, 2021) |
| Salary Increase | Minimum of 3.00% or based on actuarial experience study within the past 5 years | Same as PA 202 uniform assumption |
| Mortality Table | A version of the Pub-2010 mortality tables with future mortality improvement projected generationally using Scale MP-2019 or based on an actuarial experience study conducted within the last five years | Pub-2010 mortality tables with future mortality improvement projected generationally using Scale MP-2019 |
| Amortization Period | Maximum closed period of 28 years for Retiree Health Systems | For FY 2021, 16 years on a closed period basis |
| Asset Valuation | Market Value as reported on Financial Statements | Same as the GASB 74/75 valuation |
| Healthcare Inflation | Non-Medicare: 7.50% decreasing 0.25% per year to a 4.50% long-term rate Medicare: 5.75% decreasing 0.25% per year to 4.50% long-term rate | Same as PA 202 uniform assumption |

GLOSSARY

The background features a complex geometric design. The top half is a solid dark gray. Below this, several overlapping triangles in various shades of gray and white create a layered, three-dimensional effect. A prominent bright red triangle is located in the bottom right corner, overlapping the other shapes.

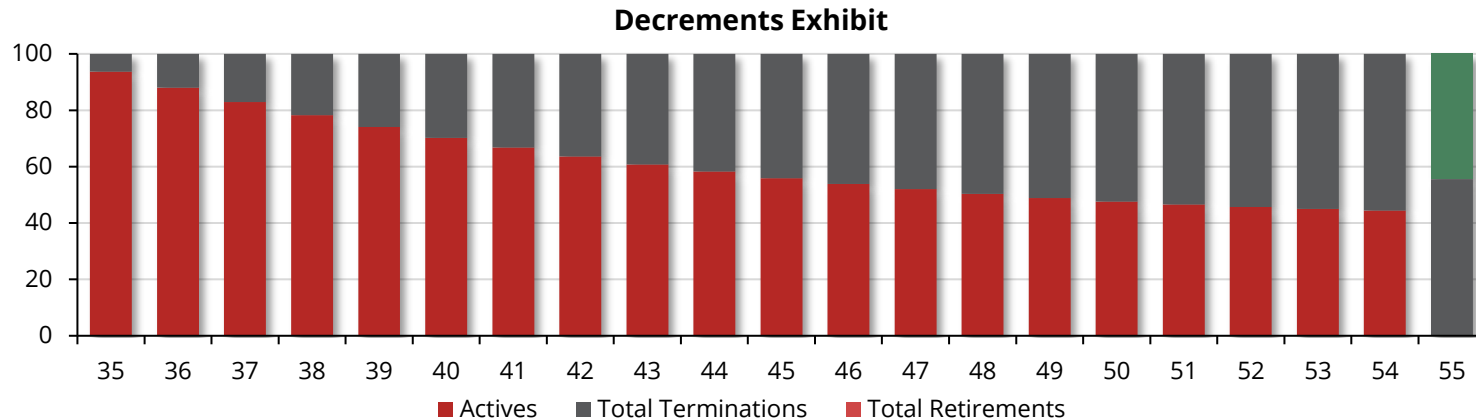
Glossary – Decrements Exhibit

Charter Township of Highland GASB 74/75 Valuation for Fiscal Year Ending December 31, 2021

The table below illustrates how actuarial assumptions can affect a long-term projection of future liabilities. Starting with 100 employees at age 35, the illustrated actuarial assumptions show that 44.43 employees out of the original 100 are expected to retire and could elect retiree health benefits at age 55.

| Age | # Remaining Employees | # of Terminations per Year ⁴ | # of Retirements per Year | Total Decrements |
|-----|-----------------------|---|---------------------------|------------------|
| 35 | 100.000 | 6.276 | 0.000 | 6.276 |
| 36 | 93.724 | 5.677 | 0.000 | 5.677 |
| 37 | 88.047 | 5.136 | 0.000 | 5.136 |
| 38 | 82.911 | 4.648 | 0.000 | 4.648 |
| 39 | 78.262 | 4.209 | 0.000 | 4.209 |
| 40 | 74.053 | 3.814 | 0.000 | 3.814 |
| 41 | 70.239 | 3.456 | 0.000 | 3.456 |
| 42 | 66.783 | 3.131 | 0.000 | 3.131 |
| 43 | 63.652 | 2.835 | 0.000 | 2.835 |
| 44 | 60.817 | 2.564 | 0.000 | 2.564 |
| 45 | 58.253 | 2.316 | 0.000 | 2.316 |

| Age | # Remaining Employees | # of Terminations per Year | # of Retirements per Year | Total Decrements |
|-----|-----------------------|----------------------------|---------------------------|------------------|
| 46 | 55.938 | 2.085 | 0.000 | 2.085 |
| 47 | 53.853 | 1.866 | 0.000 | 1.866 |
| 48 | 51.987 | 1.656 | 0.000 | 1.656 |
| 49 | 50.331 | 1.452 | 0.000 | 1.452 |
| 50 | 48.880 | 1.253 | 0.000 | 1.253 |
| 51 | 47.627 | 1.060 | 0.000 | 1.060 |
| 52 | 46.567 | 0.877 | 0.000 | 0.877 |
| 53 | 45.690 | 0.707 | 0.000 | 0.707 |
| 54 | 44.983 | 0.553 | 0.000 | 0.553 |
| 55 | 44.430 | 0.000 | 44.430 | 44.430 |



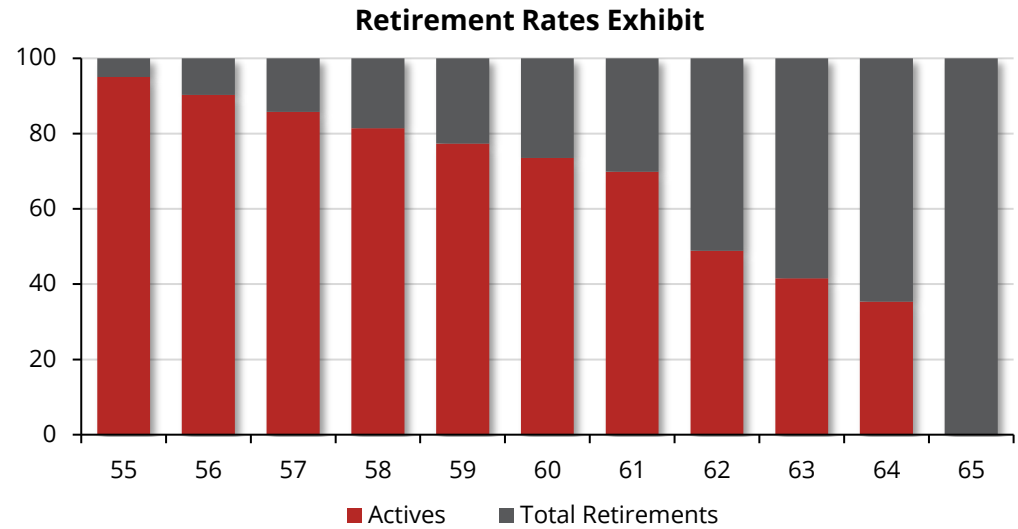
⁴ The above rates are illustrative rates and are not used in our GASB calculations.

Glossary – Retirement Rates Exhibit

Charter Township of Highland GASB 74/75 Valuation for Fiscal Year Ending December 31, 2021

The table below illustrates how actuarial assumptions can affect a long-term projection of future liabilities. The illustrated retirement rates show the number of employees who are assumed to retire annually based on 100 employees age 55 who are eligible for retiree health care coverage. The average age at retirement is 62.0.

| Age | Active Employees BOY | Annual Retirement Rates* | # Retirements per Year | Active Employees EOY |
|-----|----------------------|--------------------------|------------------------|----------------------|
| 55 | 100.000 | 5.0% | 5.000 | 95.000 |
| 56 | 95.000 | 5.0% | 4.750 | 90.250 |
| 57 | 90.250 | 5.0% | 4.513 | 85.738 |
| 58 | 85.738 | 5.0% | 4.287 | 81.451 |
| 59 | 81.451 | 5.0% | 4.073 | 77.378 |
| 60 | 77.378 | 5.0% | 3.869 | 73.509 |
| 61 | 73.509 | 5.0% | 3.675 | 69.834 |
| 62 | 69.834 | 30.0% | 20.950 | 48.884 |
| 63 | 48.884 | 15.0% | 7.333 | 41.551 |
| 64 | 41.551 | 15.0% | 6.233 | 35.318 |
| 65 | 35.318 | 100.0% | 35.318 | 0.000 |



* The above rates are illustrative rates and are not used in our GASB calculations.

Glossary – Definitions

Charter Township of Highland GASB 74/75 Valuation for Fiscal Year Ending December 31, 2021

GASB 75 defines several unique terms not commonly employed in the funding of pension and retiree health plans. The definitions of the terms used in the GASB actuarial valuations are noted below.

1. **Actuarial Assumptions** – Assumptions as to the occurrence of future events affecting health care costs, such as: mortality, withdrawal, disablement and retirement; changes in compensation and Government provided health care benefits; rates of investment earnings and asset appreciation or depreciation; procedures used to determine the Actuarial Value of Assets; characteristics of future entrants for Open Group Actuarial Cost Methods; and other relevant items.
2. **Actuarial Cost Method** – A procedure for determining the Actuarial Present Value of Future Benefits and expenses and for developing an actuarially equivalent allocation of such value to time periods, usually in the form of a Service Cost and a Total OPEB Liability.
3. **Actuarially Determined Contribution** - A target or recommended contribution to a defined benefit OPEB plan for the reporting period, determined in accordance with the parameters and in conformity with Actuarial Standards of Practice.
4. **Actuarial Present Value** – The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions. For purposes of this standard, each such amount or series of amounts is:
 - a. adjusted for the probable financial effect of certain intervening events (such as changes in compensation levels, Social Security, marital status, etc.);
 - b. multiplied by the probability of the occurrence of an event (such as survival, death, disability, termination of employment, etc.) on which the payment is conditioned; and
 - c. discounted according to an assumed rate (or rates) of return to reflect the time value of money.
5. **Deferred Outflow / (Inflow) of Resources** – represents the following items that have not been recognized in the OPEB Expense:
 - a. Differences between expected and actual experience of the OPEB plan
 - b. Changes in assumptions
 - c. Differences between projected and actual earnings in OPEB plan investments (for funded plans only)
6. **Explicit Subsidy** – The difference between (a) the amounts required to be contributed by the retirees based on the premium rates and (b) actual cash contribution made by the employer.
7. **Funded Ratio** – The actuarial value of assets expressed as a percentage of the Total OPEB Liability.

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8. **Healthcare Cost Trend Rate** – The rate of change in the per capita health claims costs over time as a result of factors such as medical inflation, utilization of healthcare services, plan design, and technological developments.
9. **Implicit Subsidy** – In an experience-rated healthcare plan that includes both active employees and retirees with blended premium rates for all plan members, the difference between (a) the age-adjusted premiums approximating claim costs for retirees in the group (which, because of the effect of age on claim costs, generally will be higher than the blended premium rates for all group members) and (b) the amounts required to be contributed by the retirees.
10. **OPEB** – Benefits (such as death benefits, life insurance, disability, and long-term care) that are paid in the period after employment and that are provided separately from a pension plan, as well as healthcare benefits paid in the period after employment, regardless of the manner in which they are provided. OPEB does not include termination benefits or termination payments for sick leave.
11. **OPEB Expense** – Changes in the Net OPEB Liability in the current reporting period, which includes Service Cost, interest cost, changes of benefit terms, expected earnings on OPEB Plan investments, reduction of active employees' contributions, OPEB plan administrative expenses, and current period recognition of Deferred Outflows / (Inflows) of Resources.
12. **Pay-as-you-go** – A method of financing a benefit plan under which the contributions to the plan are generally made at about the same time and in about the same amount as benefit payments and expenses becoming due.
13. **Per Capita Costs** – The current cost of providing postretirement health care benefits for one year at each age from the youngest age to the oldest age at which plan participants are expected to receive benefits under the plan.
14. **Present Value of Future Benefits** – Total projected benefits include all benefits estimated to be payable to plan members (retirees and beneficiaries, terminated employees entitled to benefits but not yet receiving them, and current active members) as a result of their service through the valuation date and their expected future service. The actuarial present value of total projected benefits as of the valuation date is the present value of the cost to finance benefits payable in the future, discounted to reflect the expected effects of the time value (present value) of money and the probabilities of payment. Expressed another way, it is the amount that would have to be invested on the valuation date so that the amount invested plus investment earnings will provide sufficient assets to pay total projected benefits when due.
15. **Real Rate of Return** – the rate of return on an investment after adjustment to eliminate inflation.

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16. **Select and Ultimate Rates** – Actuarial assumptions that contemplate different rates for successive years. Instead of a single assumed rate with respect to, for example, the investment return assumption, the actuary may apply different rates for the early years of a projection and a single rate for all subsequent years. For example, if an actuary applies an assumed investment return of 8% for year 20W0, then 7.5% for 20W1, and 7% for 20W2 and thereafter, then 8% and 7.5% select rates, and 7% is the ultimate rate.
17. **Service Cost** – The portion of the Actuarial Present Value of projected benefit payments that are attributed to a valuation year by the Actuarial Cost Method.
18. **Substantive Plan** – The terms of an OPEB plan as understood by the employer(s) and plan members.
19. **Total OPEB Liability** – That portion, as determined by a particular Actuarial Cost Method, of the Actuarial Present Value of Future Benefits which is attributed to past periods of employee service (or not provided for by the future Service Costs).