



**Actuarial Valuation
of
Other Post Employment Benefits (OPEBs)
and
GASB Statements No. 45 and 75
as of January 1, 2017**

City of Duluth, Minnesota

Report Prepared September 7, 2017

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City of Duluth, Minnesota

Actuarial Valuation as of January 1, 2017

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City of Duluth, Minnesota

Actuarial Valuation as of January 1, 2017

Actuarial Certification

We, the undersigned, are consulting actuaries associated with the firm CBIZ Retirement Plan Services. We are members of the American Academy of Actuaries and meet its qualification standards to provide statements of actuarial opinion for actuarial valuations of Other Postemployment Benefits (OPEBs). We have completed an actuarial valuation of the OPEB plan for the City of Duluth, Minnesota as of January 1, 2017. This report contains the results of the valuation.

To the best of our knowledge, the information supplied in this report is complete and accurate. In our opinion, the methods and assumptions used in the valuation comply with the Governmental Accounting Standards Board (GASB), particularly GASB Statements No. 45 and 75, "Accounting and Financial Reporting for Postemployment Benefits Other Than Pension". The assumptions are related reasonably to the past experience of the Plan, and they represent our best estimate of anticipated experience under the Plan. Nevertheless, the actual costs of the plan in the future will differ from the results of the valuation, as the emerging experience varies from the assumptions projected in the valuation.

We have relied on the City for the accuracy and completeness of the benefit plans, assets, claims and premium data, and the employee census. While we have not audited the data, we have reviewed it for reasonableness and consistency. A summary of our understanding of the plan features is provided in this report.

This report has been prepared for the use and benefit of the City in assessing the effect of GASB Statements No. 45 and 75 on accounting for OPEB plans. It should not be relied upon for other purposes, and it is not intended to benefit any other party. It may be shared in its entirety with all auditors and the general public.

Neither CBIZ nor any of the employees working on this engagement has any relationship with the City of Duluth, Minnesota that may impair, or appear to impair, the independence and objectivity of our work.

This actuarial valuation was prepared in accordance with the applicable Statements of the Governmental Accounting Standards Board and the Actuarial Standards of Practice issued by the American Academy of Actuaries.

Frank T. Vedegys, FSA, EA, MAAA
Senior Consulting Actuary

September 7, 2017

Date





City of Duluth, Minnesota Actuarial Valuation as of January 1, 2017

Summary of Valuation Results

Valuation Date	1/1/2017
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Participant Data

Active Employees	845
Retirees and Covered Spouses	1580
Total	2425

Total OPEB Liability (TOL)

Active Employees	\$ 66,489,876
Retirees and Covered Spouses	+ 103,511,093
Total OPEB Liability	\$ 170,000,969

Fiduciary Net Position (FNP)

	- 48,829,195
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Net OPEB Liability (NOL)

	\$ 121,171,774
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FNP as a Percentage of TOL

	28.72%
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Actuarial Determined Contribution (ADC) for Fiscal Year Ending:

December 31, 2017	\$ 11,456,261
December 31, 2018	10,536,980

Estimated OPEB Expense (Income) for Fiscal Year Ending:

December 31, 2017	\$ 10,917,671
December 31, 2018	9,532,891

Discount Rate Sensitivity

A 1 % increase in the discount rate would decrease the Net OPEB Liability by \$16,267,000.
 A 1 % decrease in the discount rate would increase the Net OPEB Liability by \$19,419,000.

Healthcare Trend Sensitivity

A 1 % increase in the healthcare trend would increase the Net OPEB Liability by \$20,449,000
 A 1 % decrease in the healthcare trend would decrease the Net OPEB Liability by \$17,096,000



City of Duluth, Minnesota Actuarial Valuation as of January 1, 2017

Development of Fiduciary Net Position at Valuation Date

Statement of Changes in Fiduciary Net Position

	1/1/2016 - 12/31/2016		
	OPEB Trust	Pay-as-you-go	Total
Balance as of Beginning of Year	\$ 44,334,515	\$ -	\$ 44,334,515
Employer Contributions	377,941	9,228,702	9,606,643
Participant Contributions	-	-	-
Implicit Subsidy	-	-	-
Investment Income, net of investment expenses	4,120,660	-	4,120,660
Total Additions	\$ 4,498,601	\$ 9,228,702	\$ 13,727,303
Benefit Payments, including implicit subsidy	-	(9,228,702)	(9,228,702)
Non-Investment Expenses	(3,920)	-	(3,920)
Total Deductions	\$ (3,920)	\$ (9,228,702)	\$ (9,232,622)
Net Change	\$ 4,494,681	\$ -	\$ 4,494,681
Balance as of End of Year	\$ 48,829,195	\$ -	\$ 48,829,195
Money-Weighted Rate of Return	9.26%	0.00%	9.26%



City of Duluth, Minnesota Actuarial Valuation as of January 1, 2017

10-Year Schedule of Funding Progress

Required Supplementary Information

Actuarial Valuation Date	Fiduciary Net Position (a)	Total OPEB Liability (b)	Net OPEB Liability (Asset) (b - a)	Funded Ratio (a / b)	Annual Covered Payroll (c)	Net OPEB Liability as a Percent of Payroll (b - a) / c
1/1/2005	\$0	\$279,934,736	\$279,934,736	0.0%	N/A	N/A
6/1/2007	13,700,000	267,381,748	253,681,748	5.1%	\$44,748,212	566.9%
6/1/2009	16,740,064	224,338,111	207,598,047	7.5%	51,536,853	402.8%
6/1/2011	27,753,929	219,748,555	191,994,626	12.6%	39,716,268	483.4%
1/1/2013	31,743,134	214,255,582	182,512,448	14.8%	35,546,938	513.4%
1/1/2015	43,257,834	172,507,535	129,249,701	25.1%	30,154,437	428.6%
1/1/2017	48,829,195	170,000,969	121,171,774	28.7%	24,248,924	499.7%



City of Duluth, Minnesota Actuarial Valuation as of January 1, 2017

10-Year Schedule of Employer Contributions

Fiscal Year Ended December 31,	Required Supplementary Information				Contributions as a Percentage of
	Actuarially Determined Contribution (a)	Actual Contribution (b)	Contribution Deficiency (Excess) (a) - (b)	Covered Payroll (c)	Covered Payroll (b) / (c)
2013	\$14,249,437	\$8,772,788	\$5,476,649	\$35,546,938	24.68%
2014	14,249,437	9,277,052	4,972,385	35,546,938	26.10%
2015	10,095,898	10,602,498	(506,600)	30,154,437	35.16%
2016	10,095,898	9,770,624	325,274	30,154,437	32.40%
2017	11,456,261	<i>11,456,261</i>	<i>0</i>	24,248,924	47.24%
2018	10,536,980	<i>10,536,980</i>	<i>0</i>	24,248,924	43.45%

Beginning Fiscal Year Ending 2018, the ADC is calculated in accordance with the Employer's funding policy, if one exists. Prior to Fiscal Year Ending 2018, the ADC is equal to the Annual Required Contribution (ARC) as calculated under GASB No. 45.



City of Duluth, Minnesota Actuarial Valuation as of January 1, 2017

Projected Retiree Benefit Payments

Exhibit A is a graph that shows the projection of expected benefit payments under the OPEB plan. These payments only reflect those participants who have already been hired or who are retired. Expected benefit payments are equal to the number of retirees each year times the per retiree cost to the employer. The first year's projected benefit payments total \$9,918,530. As the last participants retire and then reach the end of their benefit period, the benefit payments decline and eventually would reach zero. Exhibit B is a table showing the first 10 years of expected benefit payments.

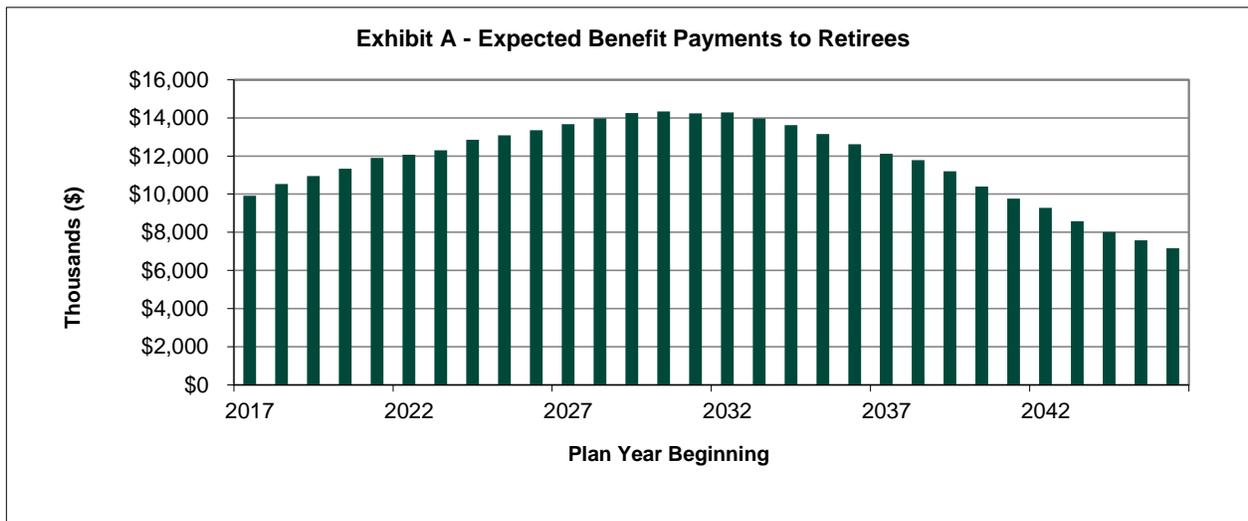


Exhibit B: First 10 Years of Expected Benefit Payments

Plan Year Beginning January 1,	Total Projected Benefits
2017	\$9,918,530
2018	10,536,980
2019	10,947,491
2020	11,332,518
2021	11,905,350
2022	12,066,351
2023	12,293,080
2024	12,857,842
2025	13,085,804
2026	13,350,401



City of Duluth, Minnesota GASB Statement No. 45

An employer can contribute the Annual Required Contribution (ARC), an amount actuarially determined according to the parameters of GASB Statement 45. The ARC represents a level of funding that, if paid on an ongoing basis, is projected to cover the Normal Cost each year and amortize any unfunded actuarial liabilities (or funding excess) over a period not to exceed thirty years. The ARC will be used by the auditor to construct a historical Schedule of Employer Contributions for the employer's financial statement notes. Although there is no requirement to actually contribute the ARC or any other amount, the auditor and/or rating agencies will consider the employer's plan of action to address the unfunded liabilities when assessing the overall creditworthiness of the employer.

Annual Required Contribution for Fiscal Year Ending: December 31, 2017

Normal Cost Component

Normal Cost	\$ 2,775,753
Expenses	-
Interest to End of Fiscal Year	158,218
Total Normal Cost	\$ 2,933,971

Amortization Component

Actuarial Accrued Liability	\$ 170,000,969
Less Assets	48,829,195
Unfunded Actuarial Accrued Liability	\$ 121,171,774
30-yr Level Dollar Amortization Factor	15.02866
Amortization Payment	\$ 8,062,715
Interest on Amortization Payment to End of Fiscal Year	459,575
Total Amortization Payment	\$ 8,522,290

Annual Required Contribution	\$ 11,456,261
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Annual OPEB Cost (Credit) and Net OPEB Obligation (Asset) for Fiscal Years Ending:

	12/31/2017
1. Net OPEB Obligation as of beginning of year	\$ 40,397,329
2. Annual Required Contribution	11,456,261
3. Interest on Net OPEB Obligation to end of year	2,302,648
4. Adjustment to Annual Required Contribution	(2,841,237)
5. Annual OPEB Expense : 2 + 3 + 4	\$ 10,917,671
6. Benefit Payments (Made Outside of Trust)*	-
7. Additional Employer Trust Contribution	(11,456,261)
8. Change in Net OPEB Obligation : 5 + 6 + 7	\$ (538,589)
9. Net OPEB Obligation at end of year: 1 + 8	\$ 39,858,740



City of Duluth, Minnesota GASB Statement No. 75

OPEB Expense (Income)

	Fiscal Year Ending 12/31/2018
OPEB Expense (Income)	
1. Service Cost	\$ 3,036,660
2. Interest Cost	9,527,852
3. Expected Return On Plan Assets	(3,031,621)
4. Recognition of Deferred Outflows/(Inflows) related to:	
Net difference between projected and actual earnings	0
Differences between expected and actual experience	0
Changes in assumptions	0
5. OPEB Expense (Income)	\$ 9,532,891

Key Assumptions for OPEB Expense (Income)

Discount Rate	5.70%
Salary Scale	3.50%
Expected Return on Assets	5.70%

Deferred Outflows/(Inflows) - Amortization Schedules

	Fiscal Year Established	Original Amount	Amortization Amount	Original Amortization Period		Outstanding Balance at End of Year
<u>Net difference between projected and actual earnings</u>						
	2018	\$ 0	\$ 0	5.00	\$	0
	2017	0	0	5.00		0
<u>Differences between expected and actual experience</u>						
	2018	\$ 0	\$ 0	2.93	\$	0
	2017	0	0	2.93		0
<u>Changes in assumptions</u>						
	2018	\$ 0	\$ 0	2.93	\$	0
	2017	0	0	2.93		0



City of Duluth, Minnesota GASB Statement No. 75

Net OPEB Liability

	<u>Fiscal Year Ending</u> <u>12/31/2018</u>
Reconciliation of Total OPEB Liability	
1. Total OPEB Liability at Beginning of Year	\$ 172,423,787
2. Service Cost	3,036,660
3. Interest Cost	9,527,852
4. Net Benefits Paid by Employer	(10,536,980)
5. Differences between expected and actual experience	0
6. Changes in assumptions	0
7. Total OPEB Liability at End of Year	\$ 174,451,319
Reconciliation of Fiduciary Net Position	
1. Fiduciary Net Position at Beginning of Year	\$ 53,188,994
2. Projected Earnings on Fiduciary Net Position	3,031,621
3. Net Difference Between Projected and Actual Earnings	(0)
4. Employer Contributions	10,536,980
5. Total Benefits Paid	(10,536,980)
6. Expenses	(5,319)
7. Participant Contributions	0
8. Fiduciary Net Position at End of Year	\$ 56,215,296
Money-Weighted Rate of Return	5.70%
Net OPEB Liability (Asset)	
1. Total OPEB Liability	\$ 174,451,319
2. Fiduciary Net Position	(56,215,296)
3. Net OPEB Liability (Asset)	\$ 118,236,023
Fiduciary Net Position as % of Total OPEB Liability	32.22%
Key Assumptions for Net OPEB Liability	
Discount Rate	5.70%
Salary Scale	3.50%
Expected Return on Assets	5.70%



City of Duluth, Minnesota GASB Statement No. 75

Deferred Outflows (Inflows)

	Fiscal Year Ending
	12/31/2018
Deferred Inflows of Resources Related to OPEB	
1. Net difference between projected and actual earnings	\$ 0
2. Differences between expected and actual experience	0
3. Changes in assumptions	0
4. Total	\$ 0
Deferred Outflows of Resources Related to OPEB	
1. Net difference between projected and actual earnings	\$ 0
2. Differences between expected and actual experience	0
3. Changes in assumptions	0
4. Total	\$ 0

Schedule of Deferred Outflows (Inflows)

Amounts reported as deferred outflows or deferred inflows of resources related to OPEBs will be recognized in OPEB expense as follows:

FYE	
2019	-
2020	-
2021	-
2022	-
2023	-
2024+	-



City of Duluth, Minnesota Actuarial Valuation as of January 1, 2017

Plan Provisions and Participant Summary

- Retiree Benefits**
- 1 Continuation of medical, pharmacy, and dental benefits under the City's group plan. Pre-Medicare retirees are enrolled in the same self-insured plan as active employees. Medicare eligible employees are enrolled in a fully-ensured Medicare Supplemental plan sponsored by the City.
 - 2 Life Insurance: \$25,000 life insurance for all eligible retirees.
 - 3 Long-Term Disability: eligible to continue receiving health benefits and \$50,000 life insurance.
 - 4 Retirees pay 100% of dental benefit costs, resulting in no liability for the City.

Eligibility

Police and Firefighters:
 Any age with 5+ years of service if hired before 1/1/2007
 Age 50 with 5+ years of service if hired after 12/31/2006

All Others:
 Age 55 with 5+ years of service. Supervisors may be eligible if involuntarily terminated.

Dependent Coverage Spouses and Surviving Spouses and children up to age 26 are eligible for healthcare benefits.

Length of Benefits *Retiree* : Life
Spouse : Life, or until remarriage

2017 Annual Premium Equivalent Rates	Plan	Single Coverage	Family Coverage
	HealthPartners (pre-65)	\$8,028	\$21,732
	Freedom/National (post-65)	3,420	6,840
	Life Insurance	\$0.27 per \$1,000 of coverage.	



City of Duluth, Minnesota Actuarial Valuation as of January 1, 2017

Plan Provisions and Participant Summary

**Retiree
Contributions**

City Police and Fire:

Hired after 12/31/2006: 100% of Premium Equivalent Rates
 Hired before 1/1/2007: Percentage of Premium Equivalent Rates according to length of service, as shown below

City Supervisory, LELS, and Confidential

Hired after 12/31/2005: 100% of Premium Equivalent Rates
 Hired before 1/1/2006: Percentage of Premium Equivalent Rates according to length of service, as shown below

All Other City Employees:

Hired after 12/31/2006: 100% of Premium Equivalent Rates
 Hired before 1/1/2007 with 15 years of service, and retired before 12/15/2009: City pays full premium.
 Hired before 1/1/2007: Percentage of Premium Equivalent Rates according to length of service, as shown below

Years of Service	Retiree Percentage of Premium	Years of Service	Retiree Percentage of Premium
5	75%	13	35%
6	70	14	30
7	65	15	25
8	60	16	20
9	55	17	15
10	50	18	10
11	45	19	5
12	40	20	0

Retirees contribute nothing for life insurance coverage.

**Changes Since
Prior Valuation**

1. Premium equivalent rates were updated reflect current rates.



City of Duluth, Minnesota Actuarial Valuation as of January 1, 2017

Plan Provisions and Participant Summary

Participant Summary

Metric	Actives	Inactives and Spouses
Count	845	1580
Average Age	44.6	69.2
Average Service	11.1	N/A
Percentage Male	72.0	48.4

Age and Service Chart

Attained Age	Years of Credited 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+	
Under 25	7	6	0	0	0	0	0	0	0	0	13
25 to 29	22	46	7	0	0	0	0	0	0	0	75
30 to 34	15	54	30	1	0	0	0	0	0	0	100
35 to 39	10	44	46	11	3	0	0	0	0	0	114
40 to 44	6	17	30	17	38	2	0	0	0	0	110
45 to 49	2	26	14	16	48	24	9	0	0	0	139
50 to 54	5	10	28	13	22	28	18	2	0	0	126
55 to 59	5	12	14	16	17	16	14	10	1	0	105
60 to 64	2	7	9	5	14	8	4	5	2	0	56
65 to 70	0	1	1	1	0	1	0	0	0	1	5
70+	1	0	0	0	0	0	0	0	0	1	2
Total	75	223	179	80	142	79	45	17	3	2	845



City of Duluth, Minnesota Actuarial Valuation as of January 1, 2017

Actuarial Methods and Assumptions

Actuarial Valuation Date	January 1, 2017
Actuarial Cost Method	Individual Entry Age Normal as a level percentage of payroll
Discount Rate	5.70%
Annual Wage Increases	3.50%
Price Inflation	2.20%
Investment Rate of Return	5.70%
Actuarial Value of Assets	Market Value
Funding Policy	Pay-as-you-go

Annual Per-Capita Claims Costs

HealthPartners		Freedom/National	
Age	Rate	Age	Rate
45	\$7,991	65	\$3,127
50	9,041	70	3,287
55	10,229	75	3,454
60	11,573	80	3,630
64	12,775	85+	3,816

Starting pre-65 per capita costs were developed using paid claims and enrollment data from January 1, 2015 through December 31, 2016. Active and retiree plan experience was used. Non-Drug Medical and Pharmacy claims were analyzed separately, and projected to the current claims year based on the most recent Segal Survey. 60% of costs were blended with 40% of the expected costs to reduce volatility. The resulting costs were then adjusted for differences in plan design and disaggregated into age-specific starting costs using average ages and assumptions on the relationship between costs and increasing age. Fixed costs and fees are not included in these costs.

Post-65 costs are based on the fully-insured premium rates, adjusted into age-specific starting costs; fixed costs and fees are included in these costs.

Morbidity Pre-65: 2.5% per year. Post-65: 1.0% per year

Annual Fixed Costs

Single Coverage	Double Coverage
\$430	\$1,074

Fixed costs apply only to pre-65 self-insured contracts through HP.



City of Duluth, Minnesota Actuarial Valuation as of January 1, 2017

Actuarial Methods and Assumptions

Annual Healthcare Trend

Years after Valuation	Pre-65 Med/Rx	Post-65 Med/Rx
1	10.00%	3.75%
2	9.50	3.75
3	9.00	3.75
4	8.50	3.75
5	8.00	3.75
6	7.50	3.75
7	7.00	3.75
8	6.50	3.75
9	6.00	3.75
10	5.50	3.75
11+	5.00	3.75

Claims costs and premium equivalent rates are assumed to increase according to the above healthcare trend. Fixed costs and fees are assumed to increase with inflation. Life insurance premiums are assumed to not increase.

Participation

Future Retirees:

100% of employees who receive a City contribution are assumed to elect medical benefits once they are eligible for retirement.

25% of employees who pay the full premium are assumed to elect medical benefits once they are eligible for retirement.

25% of members are assumed to elect dental benefits once they are eligible for retirement.

Current Retirees: Based on current coverage election. It is assumed that no one will opt in or opt out of coverage once initial retirement election is made.

Spousal Participation

Future Retirees: 100% of participating retirees are assumed to be married at retirement and 65% will cover their spouse.

Current Retirees: Based on current coverage election.

Spouse Age

Male spouses are assumed to be 3 years older, and female spouses are assumed to be 3 years younger. Actual age is used for spouses of current retirees, if provided.



City of Duluth, Minnesota Actuarial Valuation as of January 1, 2017

Actuarial Methods and Assumptions

Mortality Rates SOA RPH-2014 Adjusted to 2006 Total Dataset Headcount-weighted Mortality projected with Scale MP-2016

Withdrawal Participants are assumed to terminate employment for reasons other than death, disability or retirement in accordance with annual rates varying by age. The following table illustrates the assumed number of such terminations per year:

Sample Age	Police & Fire	Others - Male	Others - Female
20	8.6%	8.4%	8.4%
30	2.8	5.4	5.4
40	1.3	3.0	3.5
50	0.5	2.0	2.5
60	0.0	0.0	0.0

Retirement Participants are assumed to retire in accordance with annual rates varying by age. The following table illustrates the assumed number of such retirements per year:

Sample Age	Police & Fire	Others - Rule of 90	Others - Not Rule of 90
<50	Withdrawal	0%	0%
50-51	20%	0	0
52	30	0	0
53-54	35	0	0
55-59	40	67	10
60	75	67	25
61	75	67	40
62-64	80	67	40
65	100	50	50
66-69	100	40	40
70	100	60	60
71	100	100	100



City of Duluth, Minnesota

Actuarial Valuation as of January 1, 2017

Actuarial Methods and Assumptions

Disability

Participants are assumed to become disabled in accordance with annual rates varying by age. The following table illustrates the assumed number of such disablements per year:

Age	Rate
20	0.03%
30	0.03
40	0.04
50	0.21
60	1.01

Changes Since Prior Valuation

1. Per-capita costs were updated to reflect experience since the previous valuation.
2. Healthcare trend was shifted to maintain the same immediate rate.
3. Mortality was updated to reflect more current rates based on the 2014 SOA study.
4. The actuarial cost method was changed to Entry Age Normal as a level percentage of payroll, per GASB 75 standards.



City of Duluth, Minnesota

Actuarial Valuation as of January 1, 2017

Rationale for Key Assumptions

Discount Rate

The discount rate is the single rate that reflects (1) the long-term expected rate of return on OPEB plan investments that are expected to be used to finance the payment of benefits, to the extent that the OPEB plan's fiduciary net position is projected to be sufficient to make projected benefit payments and OPEB plan assets are expected to be invested using a strategy to achieve that return, and (2) a yield or index rate for 20-year, tax-exempt general obligation municipal bonds with an average rating of AA/Aa or higher (or equivalent quality on another scale), to the extent that the conditions for use of the long-term expected rate of return are not met.

Single Equivalent Interest Rate (SEIR)

Long-Term Expected Rate of Return	5.70%
Municipal Bond Index Rate*	3.70%
Fiscal Year in which Fiduciary Net Position is Projected to be Depleted	N/A
Single Equivalent Interest Rate	5.70%

* Source: S&P Municipal Bond 20 Year High Grade Rate Index

Expected Long-Term Rate of Return on Assets Selection

The investment policy of the Company is determined based on the goals and objectives of the Plan and the risk tolerance of the Company. As new information regarding the economic environment becomes available the investment policy may need to be revised. Asset allocations fluctuate due to market performance, however, the targeted OPEB asset allocation is as described below. The Company's objective in selecting the Expected Long-Term rate of return on Assets is to estimate the single rate of return that reflects the historical returns, future expectations for each asset class, and the asset mix of the plan assets.

Asset Classes	Actual Allocation (a)	Target Allocation (b)	Expected Return (c)	Arithmetic Mean (b) x (c)
Domestic Fixed Income	29%	30%	3.0%	0.9%
International Fixed Income	0%	0%	0.0%	0.0%
Domestic Equity	71%	70%	6.9%	4.8%
International Equity	0%	0%	0.0%	0.0%
Private Equity	0%	0%	0.0%	0.0%
Real Estate	0%	0%	0.0%	0.0%
Cash	0%	0%	0.0%	0.0%
Other	0%	0%	0.0%	0.0%
				5.7%



City of Duluth, Minnesota Actuarial Valuation as of January 1, 2017

Rationale for Key Assumptions

Annual Healthcare Trend

Trend rates are based on plan experience, historical trends, and industry norms. The immediate trend rates are assumed to decrease to an ultimate trend rate over a period of 5 to 10 years. Healthcare costs are currently approximately 17% of the Gross Domestic Product (GDP). The ultimate rate is decreased over time to maintain this relationship.

Withdrawal, Disability, Retirement

The current assumption has been selected based on the actuary's experience with plans of a similar size, plan design, workforce composition, and discussions with the Employer.

Mortality

Because the Employer does not have enough data to conduct a fully credible experience analysis with respect to mortality, the current assumption has been selected based on industry studies, the actuary's experience with plans of a similar size, plan design, workforce composition, and discussions with the Employer.

Participation

The assumed rate of participation incorporated into these measurements is based on an experience analysis of the plan's past experience, the actuary's experience with plans of a similar size, plan design and retiree contribution level.

Spousal Participation and Age

Because the employer does not have enough data to conduct a fully credible experience analysis with respect to spousal information, the current assumption has been selected based on observations of the past experience, the actuary's experience with plans of a similar size and plan design.



City of Duluth, Minnesota Actuarial Valuation as of January 1, 2017

Definitions

Actuarial Present Value of Projected Benefits	Projected benefit payments discounted to reflect the expected effects of the time value (present value) of money and the probabilities of payment.
Actuarial Valuation Date	The date as of which the service cost, total OPEB liability, and related actuarial present value of projected benefit payments is determined in conformity with Actuarial Standards of Practice unless otherwise specified by the GASB.
Actuarially Determined Contribution (ADC)	A target or recommended contribution to a defined benefit plan for the reporting period, determined in conformity with Actuarial Standards of Practice based on the most recent measurement available when the contribution for the reporting period was adopted.
Closed Period	A specific number of years that is counted from one date and declines to zero with the passage of time. For example, if the recognition period initially is five years on a closed basis, four years remain after the first year, three years after the second year, and so forth.
Contributions	Additions to a OPEB plan's fiduciary net position for amounts from employers, nonemployer contributing entities (for example, state government contributions to a local government plan), or employees. Contributions can result from cash receipts by the OPEB plan or from recognition by the OPEB plan of a receivable from one of these sources.
Cost-of-Living Adjustments	Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.
Covered Employee Payroll	The payroll of employees that are provided with OPEBs through the OPEB plan.
Deferred Outflows and Inflows of Resources Related to OPEBs	Deferred outflows of resources and deferred inflows of resources related to OPEBs arising from certain changes in the net OPEB liability.



City of Duluth, Minnesota

Actuarial Valuation as of January 1, 2017

Definitions

Defined Benefit OPEB	OPEB for which the benefits that the employee will receive at or after separation from employment are defined by the benefit terms. The OPEB may be stated as (a) a specified dollar amount; (b) an amount that is calculated based on one or more factors such as age, years of service, and compensation; or (c) a type or level of coverage such as prescription drug coverage or a percentage of health insurance premiums.
Defined Contribution OPEB	OPEB having terms that (a) provide an individual account for each employee; (b) define the contributions that an employer or nonemployer contributing entity is required to make (or the credits that it is required to provide) to an active employee's account for periods in which that employee renders service; and (c) provide that the OPEB an employee will receive will depend only on the contributions (or credits) to the employee's account, actual earning on investments of those contributions (or credits), and the effects of forfeitures of contributions (or credits) made for other employees, as well as OPEB plan administrative costs, that are allocated to the employee's account
Discount Rate	<p>The single rate of return that, when applied to all projected benefit payments, results in an actuarial present value of projected benefit payments equal to the total of the following:</p> <ol style="list-style-type: none">1. The actuarial present value of benefit payments projected to be made in future periods in which (1) the amount of the OPEB plan's fiduciary net position is projected (under the requirements of Statement 75) to be greater than the benefit payments that are projected to be made in that period and (2) OPEB plan assets up to that point are expected to be invested using a strategy to achieve the long-term expected rate of return, calculated using the long-term expected rate of return on OPEB plan investments.2. The actuarial present value of projected benefit payments not included in (a), calculated using a yield or index rate 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).



City of Duluth, Minnesota Actuarial Valuation as of January 1, 2017

Definitions

Entry Age Actuarial Cost Method	A method under which the actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis over the earnings or service of the individual between entry age and assumed exit age(s). The portion of this actuarial present value allocated to a valuation year is called the <i>normal cost</i> . The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is called the <i>actuarial accrued liability</i> .
Healthcare Cost Trend Rates	The rates of change in 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.
Money-Weighted Rate of Return	A method of calculating period-by-period returns on OPEB plan investments that adjusts for the changing amounts actually invested. For purposes of Statement 74, money-weighted rate of return is calculated as the internal rate of return on OPEB plan investments, net of OPEB plan investment expense.
Net OPEB Liability	The liability of employers and nonemployer contributing entities to employees for benefits provided through a defined benefit OPEB
OPEB Expense	OPEB expense arising from certain changes in the net OPEB liability.
Other Postemployment Benefits (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.
Postemployment Healthcare Benefits	Medical, dental, vision, and other health-related benefits paid subsequent to the termination of employment.
Projected Benefit Payments	All benefits (including refunds of employee contributions) estimated to be payable through the OPEB plan (including amounts to be paid by employers or nonemployer contributing entities as the benefits come due) to current active and inactive employees as a result of their past service and their expected future service.



City of Duluth, Minnesota

Actuarial Valuation as of January 1, 2017

Definitions

Real Rate of Return	The rate of return on an investment after adjustment to eliminate inflation.
Service Costs	The portions of the actuarial present value of projected benefit payments that are attributed to valuation years.
Termination Benefits	Inducements offered by employers to active employees to hasten the termination of services, or payments made in consequence of the early termination of services. Termination benefits include early-retirement incentives, severance benefits, and other termination-
Total OPEB Liability	The portion of the actuarial present value of projected benefit payments that is attributed to past periods of employee service in conformity with the requirements of Statement 75. The total OPEB liability is the liability of employers and nonemployer contributing entities to employees for benefits provided through a defined benefit OPEB plan that is not administered through a trust that meets the criteria of paragraph 4 of Statement 75.