



CBIZ Retirement Plan Services

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July 15, 2019

Wayne Parson
Chief Financial Officer
411 West 1st Street
Room 107
Duluth, MN 55802

RE: Actuarial Valuation of Other Post-Employment Benefits under GASB Statements No. 74 and 75 as of January 1, 2019

Dear Wayne:

Enclosed are the results of the Actuarial Valuation of Other Post-Employment Benefits (OPEBs) under GASB Statements No. 74 and 75 for City of Duluth.

Overall, the Total OPEB Liability decreased relative to the expectation from the prior valuation. Below is a summary of the primary drivers of the decrease:

- Updated per-capita healthcare cost assumptions and premium equivalent rates, including a 3% decrease in Medicare supplemental premiums from 2017 - 2019

The decrease in the Medicare supplemental premium yielded the most significant reduction to the total liability and projected cash flows. The Gains/Losses generated by the updated actuarial valuation will be recognized in OPEB Expense over future measurement periods, beginning in 2019.

As was the case in the previous actuarial valuation, the City does not have a formal or written funding policy. Therefore, the Actuarially Determined Contributions disclosed in the valuation are based on the projected "pay-as-you-go" net benefit payments.

Please review the results thoroughly. If you have any further questions or concerns, feel free to reach out to me by phone at 216.525.4683, or by e-mail at AJJohnson@CBIZ.com.

Respectfully,

A handwritten signature in blue ink that reads "Alex J. Johnson".

Alex J. Johnson
Actuarial Consultant

Enclosure(s)



**Actuarial Valuation
of
Other Post Employment Benefits (OPEBs)
as of January 1, 2019
and
GASB Statements No. 74 and 75
City of Duluth**

Report Prepared July 15, 2019

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City of Duluth

Actuarial Valuation as of January 1, 2019

Table of Contents

	Page
Section 1: Actuarial Certification	1
Section 2: Summary of Valuation Results	2
Development of Fiduciary Net Position at Valuation Date	3
Development of the Actuarially Determined Contributions	4
10-year Schedule of Funding Progress	5
10-year Schedule of Employer Contributions	6
Projected Retiree Benefit Payments	7
GASB Statements No. 74 and 75	8
Section 3: Participant Summary	12
Plan Provisions	13
Actuarial Methods and Assumptions	15
Rationale for Key Assumptions	19
Definitions	22



City of Duluth

Actuarial Valuation as of January 1, 2019

Actuarial Certification

I, the undersigned, am a consulting actuary associated with the firm CBIZ Retirement Plan Services. I am a member 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). I have completed an actuarial valuation of the OPEB Plan for the City of Duluth as of January 1, 2019. This report contains the results of the valuation.

To the best of my knowledge, the information supplied in this report is complete and accurate. In my opinion, the methods and assumptions used in the valuation comply with the Governmental Accounting Standards Board (GASB), particularly GASB Statements No. 74 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 my 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.

I have relied on the City for the accuracy and completeness of the benefit plans, assets, claims and premium data, and the employee census. While I have not audited the data, I have reviewed it for reasonableness and consistency. A summary of my 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. 74 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 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

July 15, 2019
Date





City of Duluth Actuarial Valuation as of January 1, 2019

Summary of Valuation Results

Fund	Enterprise	General	Total
Participant Data			
Active Employees	193	647	840
Retirees and Covered Spouses	305	1,279	1,584
Total	498	1,926	2,424
Present Value of Future Benefits (PVFB)			
Active Employees	\$ 11,552,250	63,998,125	\$ 75,550,375
Retirees and Covered Spouses	16,457,295	82,425,620	98,882,915
Present Value of Future Benefits	\$ 28,009,545	146,423,745	\$ 174,433,290
Total OPEB Liability (TOL)			
Active Employees	\$ 9,603,852	52,830,295	\$ 62,434,147
Retirees and Covered Spouses	16,457,295	82,425,620	98,882,915
Total OPEB Liability	\$ 26,061,147	135,255,915	\$ 161,317,062
Fiduciary Net Position (FNP)	(25,733,070)	(30,671,623)	(56,404,693)
Net OPEB Liability (NOL)	\$ 328,077	104,584,292	\$ 104,912,369
FNP as a Percentage of TOL	98.74%	22.68%	34.97%
Actuarial Determined Contribution (ADC) for Year Ending:			
December 31, 2019	\$ 1,737,735	7,881,821	\$ 9,619,556
December 31, 2020	1,768,058	8,282,064	10,050,122



City of Duluth Actuarial Valuation as of January 1, 2019

Development of Fiduciary Net Position at Valuation Date

Statement of Changes in Fiduciary Net Position

	1/1/2018 - 12/31/2018		
	OPEB Trust	Pay-as-you-go	Total
Balance as of Beginning of Year	\$ 57,717,139	\$ -	\$ 57,717,139
Employer Contributions	777,045	10,901,439	11,678,484
Participant Contributions	-	-	-
Implicit Subsidy	-	-	-
Investment Income, net of investment expenses	(1,841,168)	-	(1,841,168)
Total Additions	\$ (1,064,123)	\$ 10,901,439	\$ 9,837,316
Benefit Payments	(244,470)	(10,901,439)	(11,145,909)
Non-Investment Expenses	(3,853)	-	(3,853)
Total Deductions	\$ (248,323)	\$ (10,901,439)	\$ (11,149,762)
Net Change	\$ (1,312,446)	\$ -	\$ (1,312,446)
Balance as of End of Year	\$ 56,404,693	\$ -	\$ 56,404,693
Money-Weighted Rate of Return	-3.16%	0.00%	-3.16%



City of Duluth

Actuarial Valuation as of January 1, 2019

Development of Actuarially Determined Contribution (ADC)

The Actuarially Determined Contribution (ADC) is calculated in accordance with the Employer's funding and investment policy. Under GASB Nos. 74 and 75, if the Employer does not have a formal, written funding policy, the ADC is calculated based on the 5-year average historical contributions as a percentage of either the ADC or the Covered Payroll.

The employer does have a qualified, irrevocable OPEB Trust, per GASB Standards. However, the employer's current policy is to pay its share of retiree benefits as they come due ('pay-as-you-go'). The employer is expected to have the ability and willingness to make benefit payments from its own resources for the life of the plan.

Actuarially Determined Contribution for Year Ending December 31, 2019	\$ 9,619,556
Expected Covered Payroll for Year Ending December 31, 2019	54,243,818
ADC as a % of Covered Payroll	18%
Actuarially Determined Contribution for Year Ending December 31, 2020	\$ 10,050,122
Expected Covered Payroll for Year Ending December 31, 2020	56,142,352
ADC as a % of Covered Payroll	18%



City of Duluth Actuarial Valuation as of January 1, 2019

Schedule of Funding Progress

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	\$ -	\$ 279,934,736	\$ 279,934,736	0.0%	N/A	0.0%
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%	51,597,031	234.8%
1/1/2019	56,404,693	161,317,062	104,912,369	35.0%	54,243,818	193.4%

Through the 1/1/2015 valuation date, only payroll for participants hired prior to the "grandfather" dates was included.



City of Duluth Actuarial Valuation as of January 1, 2019

10-Year Schedule of Employer Contributions

Fiscal Year Ended December 31,	Actuarially Determined Contribution (a)	Historical Contribution (b)	Contribution Deficiency (Excess) (a) - (b)	Covered Payroll (c)	Contributions as a Percentage of Covered Payroll (b) / (c)
12/31/2013	\$ 14,249,437	\$ 8,772,788	\$ 5,476,649	\$ 35,546,938	24.68%
12/31/2014	14,249,437	9,277,052	4,972,385	35,546,938	26.10%
12/31/2015	10,095,898	10,602,498	(506,600)	30,154,437	35.16%
12/31/2016	10,095,898	9,770,624	325,274	30,154,437	32.40%
12/31/2017	11,456,261	10,222,267	1,233,994	51,597,031	19.81%
12/31/2018	10,536,980	11,678,484	(1,141,504)	51,597,031	22.63%
12/31/2019	9,619,556	9,619,556	-	54,243,818	17.73%
12/31/2020	10,050,122	10,050,122	-	56,142,352	17.90%

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.

To be determined

Historical payroll reflects that disclosed as of the most recent actuarial valuation date. Through years ending 12/31/2016, only payroll for participants hired prior to the "grandfather" dates was included.



City of Duluth Actuarial Valuation as of January 1, 2019

Projected Retiree Benefit Payments

Exhibit A is a graph that shows the 30-year 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 \$9,619,556. 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.

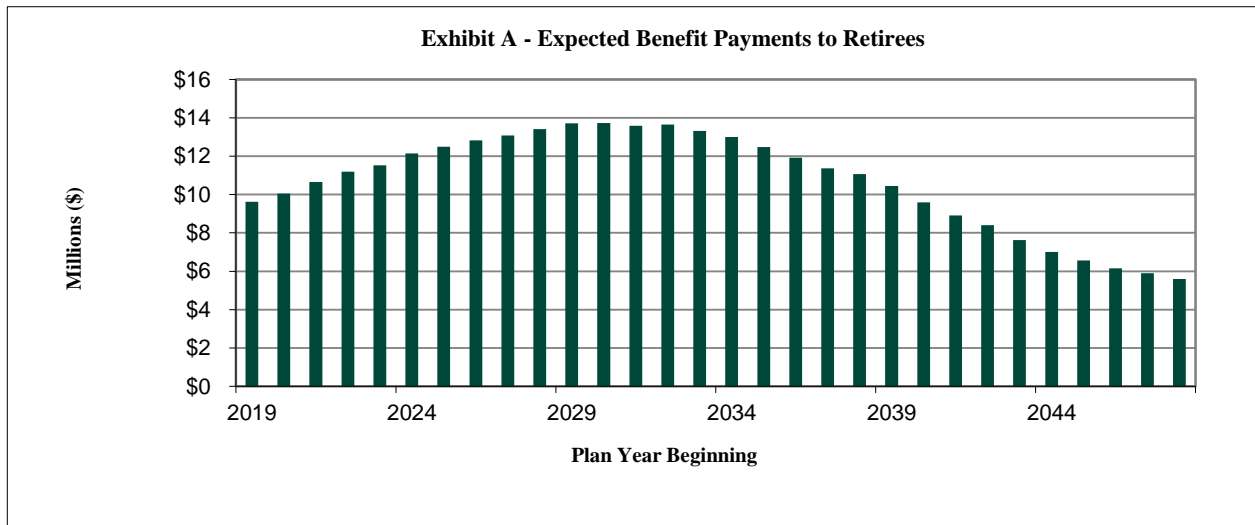


Exhibit B: First 10 Years of Expected Benefit Payments

Plan Year Beginning January 1,	Total Projected Benefits
2019	\$ 9,619,556
2020	10,050,122
2021	10,648,544
2022	11,192,749
2023	11,528,895
2024	12,136,393
2025	12,497,509
2026	12,818,946
2027	13,076,019
2028	13,412,913



City of Duluth GASB Statements No. 74 and 75

OPEB Expense (Income)

	Fiscal Year Ending	
	12/31/2020 <i>Estimate</i>	12/31/2019 <i>Estimate</i>
OPEB Expense (Income)		
1. Service Cost	\$ 2,526,364	\$ 2,440,931
2. Interest Cost	9,083,921	8,990,483
3. Non-Investment Administrative Expenses	5,961	5,640
4. Employee Contributions	0	0
5. Projected Earnings on Fiduciary Net Position	(3,397,826)	(3,214,907)
6. Recognition of Deferred Outflows/(Inflows) related to:		
Net difference between projected and actual earnings	1,026,653	1,026,653
Differences between expected and actual experience	312,043	312,043
Changes in assumptions	(3,159,352)	(3,159,352)
Contributions subsequent to measurement date	0	0
7. Ad Hoc Postemployment Benefit Changes	0	0
8. OPEB Expense (Income)	<u>\$ 6,397,764</u>	<u>\$ 6,401,491</u>
Development of Interest Cost on:	% of Period	
1. Beginning Total OPEB Liability	100%	\$ 9,298,348
2. Service Cost	50%	72,001
3. Benefit Payments	50%	(286,428)
4. Total Interest Cost on Total OPEB Liability		<u>\$ 9,083,921</u>
Development of Projected Earnings on:	% of Period	
1. Beginning Fiduciary Net Position	100%	\$ 3,397,996
2. Employer Contributions	50%	286,428
3. Employee Contributions	50%	0
4. Benefit Payments	50%	(286,428)
5. Non-Investment Administrative Expenses	50%	(170)
6. Total Projected Earnings on Fiduciary Net Position		<u>\$ 3,397,826</u>
Key Assumptions for OPEB Expense (Income)		
Discount Rate	5.70%	5.70%
Salary Scale	3.50%	3.50%
Expected Return on Assets	5.70%	5.70%



City of Duluth GASB Statements No. 74 and 75

Net OPEB Liability

	Fiscal Year Ending	
	12/31/2020	12/31/2019
	<i>Estimate</i>	<i>Estimate</i>
Reconciliation of Total OPEB Liability		
1. Total OPEB Liability at End of Prior Year	\$ 163,128,920	\$ 174,016,061
2. Service Cost	2,526,364	2,440,931
3. Interest Cost	9,083,921	8,990,483
4. Net Benefits Paid by Employer	(10,050,122)	(9,619,556)
5. Ad Hoc Postemployment Benefit Changes	0	0
6. Differences between expected and actual experience	0	1,391,711
7. Changes in assumptions	0	(14,090,710)
8. Total OPEB Liability at End of Year	<u>\$ 164,689,083</u>	<u>\$ 163,128,920</u>
Reconciliation of Fiduciary Net Position		
1. Fiduciary Net Position at End of Prior Year	\$ 59,613,960	\$ 56,404,693
2. Projected Earnings on Fiduciary Net Position	3,397,826	3,214,907
3. Net Difference Between Projected and Actual Earnings	0	0
4. Employer Contributions	10,050,122	9,619,556
5. Total Benefits Paid	(10,050,122)	(9,619,556)
6. Expenses	(5,961)	(5,640)
7. Employee Contributions	0	0
8. Fiduciary Net Position at End of Year	<u>\$ 63,005,825</u>	<u>\$ 59,613,960</u>
Money-Weighted Rate of Return	5.70%	5.70%
Net OPEB Liability (Asset)		
1. Total OPEB Liability	\$ 164,689,083	\$ 163,128,920
2. Fiduciary Net Position	<u>(63,005,825)</u>	<u>(59,613,960)</u>
3. Net OPEB Liability (Asset)	<u>\$ 101,683,258</u>	<u>\$ 103,514,960</u>
Fiduciary Net Position as % of Total OPEB Liability	38.26%	36.54%
Net OPEB Liability: 1% increase in the discount rate	\$ 84,073,979	\$ 87,335,315
Net OPEB Liability: 1% decrease in the discount rate	122,659,684	122,744,870
Net OPEB Liability: 1% increase in healthcare trend	122,916,837	123,258,507
Net OPEB Liability: 1% decrease in healthcare trend	83,791,002	86,870,536
Key Assumptions for Net OPEB Liability		
Discount Rate	5.70%	5.70%
Salary Scale	3.50%	3.50%
Expected Return on Assets	5.70%	5.70%



City of Duluth GASB Statements No. 74 and 75

Deferred Outflows (Inflows)

	Fiscal Year Ending	
	12/31/2020	12/31/2019
	<i>Estimate</i>	<i>Estimate</i>
Deferred Inflows of Resources Related to OPEB		
1. Net difference between projected and actual earnings	\$ 0	\$ 0
2. Differences between expected and actual experience	0	0
3. Changes in assumptions	7,772,006	10,931,358
4. Total	\$ 7,772,006	\$ 10,931,358
Deferred Outflows of Resources Related to OPEB		
1. Net difference between projected and actual earnings	\$ 2,053,301	\$ 3,079,954
2. Differences between expected and actual experience	767,625	1,079,668
3. Changes in assumptions	0	0
4. Total	\$ 2,820,926	\$ 4,159,622

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 12/31/2020		FYE 12/31/2019	
2021	\$ (1,820,656)	2020	\$ (1,820,656)
2022	(1,820,661)	2021	(1,820,656)
2023	(1,309,763)	2022	(1,820,661)
2024	-	2023	(1,309,763)
2025	-	2024	-
2026+	-	2025+	-



City of Duluth GASB Statements No. 74 and 75

Deferred Outflows (Inflows) (cont.)

Deferred Outflows/(Inflows) - Historical Amortization Schedules

Fiscal Year Established	Original Amount	Amortization Amount	Original Amortization Period	Outstanding Balance at 12/31/2020	Outstanding Balance at 12/31/2019
<u>Net difference between projected and actual earnings</u>					
2020	\$ 0	\$ 0	5.00	\$ 0	\$ N/A
2019	0	0	5.00	0	0
2018	5,133,260	1,026,653	5.00	2,053,301	3,079,954
<u>Differences between expected and actual experience</u>					
2020	\$ 0	\$ 0	4.46	\$ 0	\$ N/A
2019	1,391,711	312,043	4.46	767,625	1,079,668
2018	0	0	0.00	0	0
<u>Changes in assumptions</u>					
2020	\$ 0	\$ 0	4.46	\$ 0	\$ N/A
2019	(14,090,710)	(3,159,352)	4.46	(7,772,006)	(10,931,358)
2018	0	0	0.00	0	0



City of Duluth Actuarial Valuation as of January 1, 2019

Participant Summary

Participant Summary

Metric	Active Employees	Retirees and Spouses
Covered Participants	840	1584
Average Age	44.7	69.8
Average Service	11.1	N/A
Percentage Male	71.3	48.3

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	3	6	0	0	0	0	0	0	0	0	9
25 to 29	10	52	14	0	0	0	0	0	0	0	76
30 to 34	15	55	32	9	0	0	0	0	0	0	111
35 to 39	5	31	49	24	2	0	0	0	0	0	111
40 to 44	8	20	29	23	26	8	0	0	0	0	114
45 to 49	3	17	27	13	23	34	1	0	0	0	118
50 to 54	9	10	17	13	23	33	24	4	0	0	133
55 to 59	2	6	17	15	17	23	7	9	0	0	96
60 to 64	0	7	13	15	9	14	2	2	2	0	64
65 to 70	0	0	3	1	1	0	1	0	0	0	6
70+	0	1	0	0	0	0	0	0	0	1	2
Total	55	205	201	113	101	112	35	15	2	1	840



City of Duluth

Actuarial Valuation as of January 1, 2019

Plan Provisions

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

Annual Premium Equivalent Rates

Plan	Single Coverage	Family Coverage
HealthPartners (pre-65)	\$10,692	\$26,292
Freedom/National (post-65)	3,312	6,624
Life Insurance	\$0.27 per \$1,000 of coverage.	

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





City of Duluth Actuarial Valuation as of January 1, 2019

Plan Provisions

Retiree

All Other City Employees:

Contributions (cont.)

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 to reflect current rates.



City of Duluth

Actuarial Valuation as of January 1, 2019

Actuarial Methods and Assumptions

Actuarial Valuation Date	January 1, 2019
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

Annual Per-Capita Healthcare Costs

Age	Med/Rx Claims Cost	Fixed Cost
40	\$ 7,312	\$ 634
45	8,374	634
50	9,591	634
55	10,984	634
60	12,580	634
64	14,022	634
65	3,038	-
70	3,193	-
75	3,356	-
80	3,527	-
85+	3,707	-

Age	Morbidity Rate
< 65	2.75%
65 - 85	1.00%
86+	0.00%

Starting pre-Medicare per-capita costs were developed using paid claims and enrollment data from January 1, 2017 through November 30, 2018. For pre-Medicare ages, active and retiree plan experience was used. Medical and Pharmacy experience were analyzed separately, and projected to the current claims year based on the expected trend from the most recent Segal Survey. 60% of the resulting per-capita costs were blended with 40% of the expected costs based on our credibility analysis to reduce volatility. The resulting costs were then disaggregated into age-specific starting costs using average ages and the morbidity assumptions below to reflect the relationship between costs and increasing age. Fixed costs and fees are shown separately, and include administrative fees as well as specific and aggregate stop-loss premiums.

Starting Medicare supplemental per-capita costs were developed using the fully-insured premium rates as provided by the insurer. The rates were then disaggregated into age-specific starting costs using average ages and the morbidity assumptions below to reflect the relationship between costs and increasing age. Fixed costs and fees are included in these costs to the extent the insurer incorporated them.



City of Duluth

Actuarial Valuation as of January 1, 2019

Actuarial Methods and Assumptions

Annual Healthcare Trend	Years after Valuation	Medical & Pharmacy		Fixed Costs
		Pre-65	Post-65	
	1	9.00%	3.75%	2.20%
	2	8.50	3.75	2.20
	3	8.00	3.75	2.20
	4	7.50	3.75	2.20
	5	7.00	3.75	2.20
	6	6.50	3.75	2.20
	7	6.00	3.75	2.20
	8	5.50	3.75	2.20
	9+	5.00	3.75	2.20

Healthcare Reform

The impact of the 40% excise tax on high cost, or 'Cadillac,' plans under the Patient Protection and Affordable Care Act (PPACA) was estimated and reflected in the plan liabilities. Our analysis determined an additional 4% load be applied to the baseline Plan liabilities.

Other legislative changes related to the Affordable Care Act were included in the valuation only to the extent they have already been implemented in the plan.

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

Actuarial Valuation as of January 1, 2019

Actuarial Methods and Assumptions

Mortality SOA RPH-2014 Total Dataset Headcount-Weighted Mortality, adjusted to 2006.

Margin for mortality improvements: Scale MP-2018

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 at sample of the assumed rates 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 rates of retirement per year:

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

Actuarial Valuation as of January 1, 2019

Actuarial Methods and Assumptions

Disability

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

Sample 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. Applied additional 4% load to Plan liabilities to estimate the impact of potential future excise taxes on high-cost ("Cadillac") plan benefits
3. Mortality improvement scale was updated from MP-2016 to MP-2018.



City of Duluth

Actuarial Valuation as of January 1, 2019

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*	3.64%
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

Investment Rate of Return

The investment policy of the Employer is determined based on the goals and objectives of the Plan and the risk tolerance of the Employer. 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 Employer'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	Target Allocation (a)	Inflation (b)	Expected Real Rate of Return (c)	Arithmetic Mean (a) x [(b) + (c)]
Domestic Fixed Income	30%	2.2%	0.8%	0.9%
International Fixed Income	0%	2.2%	0.0%	0.0%
Domestic Equity	70%	2.2%	4.7%	4.8%
International Equity	0%	2.2%	0.0%	0.0%
Private Equity	0%	2.2%	0.0%	0.0%
Real Estate	0%	2.2%	0.0%	0.0%
Cash	0%	2.2%	0.0%	0.0%
Other	0%	2.2%	0.0%	0.0%
	100.0%	2.2%	3.5%	5.7%



City of Duluth

Actuarial Valuation as of January 1, 2019

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 17.9% of the Gross Domestic Product (GDP), according to the Center for Medicare & Medicaid Services. The ultimate rate is decreased over time to maintain this relationship.

Healthcare Reform

To estimate the impact of the 40% excise tax on high cost, or 'Cadillac,' plans under the Patient Protection and Affordable Care Act (PPACA), the following parameters and assumptions were used:

Per-capita claims costs from the actuarial valuation were used for all retirees and assumed to increase with valuation trend.

The 2022 single cost threshold is assumed to be \$11,850 for pre-Medicare retirees and \$10,200 for Medicare-eligible retirees. The 2022 family cost threshold is assumed to be \$30,950 for pre-Medicare retirees and \$27,500 for Medicare-eligible retirees.

The 2022 thresholds are adjusted by the amount that the accumulated cost increases for the FEHBP 'Standard' Plan from Blue Cross Blue Shield from 2010 - 2022, exceeds 55%.

After 2022, the cost thresholds are indexed by CPI (CPI+1 in 2023). CPI is assumed to be a constant 3.0%.

For fully-insured plans, the excise tax is grossed-up by 35% to reflect the 'add-on' in the premium rate. This reflects the fact that the excise tax paid by the insurer is not tax deductible to the insurer.

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.



City of Duluth Actuarial Valuation as of January 1, 2019

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

Actuarial Valuation as of January 1, 2019

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

Actuarial Valuation as of January 1, 2019

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 plan.
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.



City of Duluth

Actuarial Valuation as of January 1, 2019

Definitions

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.
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-related benefits.
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.