

# The City of Bismarck Employees' Pension Plan

Actuarial Valuation

January 1, 2023



**Gallagher**

Insurance | Risk Management | Consulting

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# The City of Bismarck Employees' Pension Plan

## Actuarial Certification

January 1, 2023 through December 31, 2023

In our opinion, the following report presents fairly the actuarial position of the City of Bismarck Employees' Pension Plan (the "Plan"). The purpose of this report is to develop a funding recommendation. Determinations for other purposes may be different; the results in this report should not be used for other purposes.

Our Actuarial Valuation has been completed with reliance upon participant and financial information provided to us by the City of Bismarck (the "City"). We have reviewed the data provided to us for general reasonableness but did not audit the data. The accuracy of the information in this report is dependent on the quality and completeness of the data provided to us.

The actuarial assumptions used in this report were selected by City of Bismarck, with the agreement of Gallagher Benefit Services, Inc. In our opinion, the actuarial assumptions used (a) each, and in the aggregate, are reasonably related to the experience of the Plan and to reasonable expectations, and (b) in the aggregate, represent our best estimate of anticipated experience under the Plan. Liabilities shown in this report were determined using actuarial valuation software designed for the specific purpose of modeling pension plan liabilities and costs. In our opinion, except as stated elsewhere in this report, the software is appropriate and produces reasonable results for this purpose.

The interest rate assumption was updated effective with this valuation. There were no other assumption changes from the previous measurement. There were no other changes in Plan provisions, cost allocation procedures, contribution allocation procedures, assumptions or methods from the January 1, 2022 Actuarial Valuation. There were no adjustments of prior measurements or use of approximations which would materially impact the results. The accrued benefits valued in this report reflect the benefit attribution pattern described by the plan provisions.

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 or additional cost or contribution requirements based on the Plan's funded status); and changes in Plan provisions or applicable law. Due to the limited scope of this engagement, we did not complete an analysis of the potential range of such future measurements.

No funded status measure presented herein is intended to assess the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations.

To the best of our knowledge, the information contained in this report is complete, accurate and in accordance with generally accepted actuarial principles as recommended by the American Academy of Actuaries. The actuary indicated below is an Enrolled Actuary and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained in this report.



Edwin L. McNamara, EA, FSPA, MAAA, FRM, CFA  
Enrollment Number 23-06568

April 2023

# The City of Bismarck Employees' Pension Plan

## Risk Assessment

January 1, 2023

All intended users of this actuarial valuation report should understand that there exist many risks that can or will significantly impact the plan's future financial condition. This section assesses the risk that future measurements deviate from expected future measurements. This is not intended to be a comprehensive risk analysis, but rather, an overview of the nature and magnitude of various risks.

### Nature of Pension Risk

Pension plans are exposed to numerous risks. The following table summarizes many of the most important risks. Items highlighted in red and yellow are discussed in greater detail.

Higher Cost Impact	Interest Rate Risk	Asset / Liability Mismatch Risk	Investment Risk
	Regulatory Risk		
		Longevity Risk	
Lower Cost Impact		Retirement Risk	Salary Scale Risk
		Disability Risk	Turnover Risk
		Payment Form Risk	Expense Risk
			Contribution Risk
	Lower Plan Sponsor Control	Higher Plan Sponsor Control	

### Sensitivity Analysis

The red factors above represent the most significant risks to the Plan:

1. Interest Rate Risk: risk that interest rates will be different than expected
2. Investment Risk: risk that investment returns will be different than expected
3. Asset/Liability Mismatch Risk: risk that changes in asset values are not matched by changes in the value of liabilities

### Historical Information

The risk factors highlighted in yellow are assumptions which we routinely review as part of our annual gain/loss analysis for the Plan. The average impact of each of these assumptions on Plan liabilities has not been significant.

# The City of Bismarck Employees' Pension Plan

## Risk Assessment

January 1, 2023

We estimated the impact of items 1 and 2 above on the Plan's funded status. Our estimates are based on the different interest rates used for minimum funding purposes as well as the impact of a 1% decrease in the funding interest rate and a 10% decrease in Plan asset values.

	Baseline	Interest Rate	Baseline w/ 10% Asset Loss
Market Value of Assets	\$ 116,080,607	\$ 116,080,607	\$ 104,472,546
Liabilities	\$ 140,625,650	\$ 158,413,161	\$ 140,625,650
Funded Ratio	83%	73%	74%
Interest Rate	7.25%	6.25%	7.25%

The interest rate sensitivity is shown comparing the funding baseline and a 1.00% decrease in the discount rate. The discount rate change of 1.00% changed the liabilities by 12.6%.

### Historical Information

The risk factors highlighted in yellow on the previous page are assumptions which we routinely review as part of our annual gain/loss analysis for the Plan. The average impact of each of these assumptions on Plan liabilities has not been significant.

### Maturity Measures

Pension plan maturity provides another way to assess risk. Shown below are certain maturity measures for the plan and a high level explanation of each measure.

	1/1/2022	1/1/2023
Retiree liability / Total funding liability	49.93%	51.84%
Market value of assets / Payroll	457.80%	407.08%
Benefit payments / Market value of assets	5.21%	6.41%
Employer Contributions / Benefit payments	43.94%	42.81%

**Retiree liability / Total funding liability:** Illustrates the maturity of the plan, with a higher percentage indicating greater risk.

**Market value of assets / Payroll:** Indicates the size of the plan in relation to the size of the workforce. A larger percentage shows that the plan is a more significant component of the organization, and consequently any contribution volatility could be more noticeable.

**Benefit payments / Market value of assets:** This cash flow indicator illustrates the portion of plan assets used each year to pay benefits.

**Employer contributions / Benefit payments:** This net cash flow figure illustrates how much is being contributed to the plan compared to how much is being paid to participants.

This is not intended to be a comprehensive risk analysis, but rather, an overview of the nature and magnitude of various risks faced by the Plan. We are available to complete a more in-depth review if the City of Bismarck decides that additional detail is warranted.

# The City of Bismarck Employees' Pension Plan

## Commentary

In this report we present the results of the January 1, 2023 Actuarial Valuation of the City of Bismarck Employees' Pension Plan. The interest rate assumption was changed from 7.50% to 7.25% since the prior valuation. There were no other changes in actuarial assumptions or plan provisions since the January 1, 2022 report.

### **Actuarially Determined Contribution (ADC)**

The annual contribution developed under the Entry Age Normal Level Percentage of Pay actuarial cost method is \$3,871,667 (13.6% of covered payroll) for the 2023 plan year. The calculation of this contribution is illustrated in Exhibit 12.

### **City's Contribution Policy**

The City commission has approved that the City contribution will be 10.4% of salary. The expected contribution for 2023 on this basis is \$2,965,634.

### **Contribution Requirements**

The valuation results are shown on page 5 in a comparison between 2022 and 2023. As of January 1, 2022, the Unfunded Actuarial Accrued Liability was (\$1,212,882) and an ADC of \$1,903,586 in 2022.

As of January 1, 2023, the Unfunded Actuarial Accrued Liability is \$24,545,043 and the ADC is \$3,871,667.

The most significant reason for the increased UAAL is an asset return of -10.1% during 2022 compared to an expected return of 7.50%. Please see Exhibit 10 for a further breakdown.

### **Funding Ratio**

Plan assets cover 98% of the Present Value of Accumulated Plan Benefits. More detail is contained in Exhibit 14. Last year plan assets covered 120% of the Present Value of Accumulated Plan Benefits. The Present Value of Accumulated Plan benefits is the value of benefits based only on salaries and service as of the valuation date and does not reflect the value of any future benefit accruals.

### **GASB No. 67 and No. 68**

Gallagher will provide the required information for GASB No. 67 and No. 68 separately.

# The City of Bismarck Employees' Pension Plan

## Executive Summary

January 1, 2022 and January 1, 2023

The following table highlights the changes since the last Actuarial Valuation:

	1/1/2022	1/1/2023
<b>1. Number of Participants</b>		
(a) Active	477	475
(b) Terminated vested	77	82
(b) Retired	<u>272</u>	<u>286</u>
(e) Total Participants	826	843
<b>2. Annual covered salaries for Participants</b>	\$ 28,863,264	\$ 28,515,711
<b>3. Actuarial Accrued Liability</b>		
(a) Active Participants	\$ 61,048,427	62,127,102
(b) Terminated vested	4,506,492	5,602,728
(c) Retired	65,367,495	72,895,820
(d) Total Actuarial Accrued Liability = (a)+(b)+(c)	\$ 130,922,414	\$ 140,625,650
<b>4. Actuarial Value of Assets</b>	\$ 132,135,296	\$ 116,080,607
<b>5. Unfunded Actuarial Accrued Liability (3d - 4)</b>	\$ (1,212,882)	\$ 24,545,043
<b>6. Expected 2022/2023 annual financial support by City</b>	\$ 3,001,779 <sup>1</sup>	\$ 2,965,634 <sup>1</sup>
<b>7. Actuarially Determined Contribution (ADC)</b>	\$ 1,903,586 <sup>2</sup>	\$ 3,871,667 <sup>2</sup>
<b>8. Amortization period for recommended contribution</b>	17	16
<b>9. Interest Rate</b>	7.50%	7.25%

<sup>1</sup> City contributions based on a percent of payroll. For 2022 and 2023 the expected contribution is based on 10.4% of payroll.

<sup>2</sup> Recommended contribution based on normal cost plus amortization with interest to the middle of the year. The amortization period is in 8. And is increasing due to total salary growth at the rate of 3.25% annually.

# Input Information



# The City of Bismarck Employees' Pension Plan

## Exhibit 1

### Summary of Plan Provisions

The following summary has been prepared for valuation purposes only. It outlines the Provisions found in Chapter 9-07 (City Employees' Pension) necessary to perform the Actuarial Valuation, as interpreted by Gallagher Benefit Services Inc.

#### Definitions

Actuarial Equivalence Factors

In calculating the actuarial equivalence of one form of benefit to another, the interest rate to be used shall be 7.0% and the mortality table to be used shall be the "applicable mortality table" as defined by Section 417(e)(3) of the Code (9-07-10).

Average Basic Monthly Compensation

The average of the monthly base compensation of a Participant over the highest 36 month period of employment. Monthly base compensation excludes overtime, bonuses, severance payments, and other remuneration in excess of base compensation (9-07-15(1)).

Effective Date of the Plan

January 1, 1966.

Early Retirement Date

Participants who have completed 60 consecutive months of contributing service and have attained age 50 are eligible for a monthly pension benefit (9-07-15(2)).

Membership Fee

Every full-time employee of the City of Bismarck except police officers and fire fighters shall be assessed and required to pay an amount of 5.0% of their basic salary (9-07-01).

Normal Form of Benefit

Married Participants receive a Joint & Two-Thirds to Survivor annuity. Single Participants receive a Life Only annuity.

Normal Retirement Date

Participants who have attained age 62 are eligible for a monthly pension benefit (9-07-15(1)).

Plan Year

January 1st through December 31st (9-07-08).

Recognized Service

Full and fractional years of contributing service during which the employee contributed to the fund (9-07-23). Military service will be included as part of the period of service with the City provided that the period does not exceed 5 years and the employee pays into the fund 5.0% of the lesser of the last full year's salary paid by the City or military salary for each year of military service (9-07-05).

# The City of Bismarck Employees' Pension Plan

## Exhibit 1

### Summary of Plan Provisions

#### Plan Provisions

Eligibility	Every full-time employee, other than members of the Police Department who are sworn officers, members of the firefighter's relief association, and employees who perform fire suppression duties. (9-07-11).																																				
Normal Retirement Benefit	Participants serving until the Normal Retirement Date are eligible for a monthly pension benefit computed by multiplying his or her highest 36 months of Average Basic Monthly Compensation times 1.75% times his or her number of full and fractional years of Recognized Service prior to January 1, 2005 plus 2.25% times his or her number of full and fractional years of Recognized Service after December 31, 2004. (9-07-15(1)).																																				
Early Retirement Benefit	The monthly pension benefit shall be equal to the Normal Retirement Benefit actuarially reduced for payments commencing prior to age 62 (9-07-15(2)). The reduction factors are as follows:																																				
	<table border="1"> <thead> <tr> <th>Age</th> <th>Factor</th> <th>Age</th> <th>Factor</th> <th>Age</th> <th>Factor</th> </tr> </thead> <tbody> <tr> <td>50</td> <td>.4287</td> <td>54</td> <td>.5557</td> <td>58</td> <td>.7353</td> </tr> <tr> <td>51</td> <td>.4567</td> <td>55</td> <td>.5947</td> <td>59</td> <td>.7918</td> </tr> <tr> <td>52</td> <td>.4870</td> <td>56</td> <td>.6373</td> <td>60</td> <td>.8542</td> </tr> <tr> <td>53</td> <td>.5199</td> <td>57</td> <td>.6841</td> <td>61</td> <td>.9233</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>62</td> <td>1.000</td> </tr> </tbody> </table>	Age	Factor	Age	Factor	Age	Factor	50	.4287	54	.5557	58	.7353	51	.4567	55	.5947	59	.7918	52	.4870	56	.6373	60	.8542	53	.5199	57	.6841	61	.9233					62	1.000
Age	Factor	Age	Factor	Age	Factor																																
50	.4287	54	.5557	58	.7353																																
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				62	1.000																																
Termination Benefit	After 60 consecutive months of contributing service and termination of employment, a Participant may elect a deferred retirement benefit to commence at an elected age 50 to 62. The Participant's deferred benefit shall equal the Normal Retirement Benefit (based on service and compensation to the date of termination) actuarially reduced for early commencement (9-07-15(3)).																																				
Death Benefit	<p>The surviving spouse (while unmarried) receives 2/3 of the actuarially reduced pension to which the Participant would have been entitled, but not less than \$65 per month provided the Participant served at least 60 consecutive months of contributing service (9-07-15(4)).</p> <p>The surviving spouse has the option to elect a refund of contributions in lieu of the above-mentioned benefit (9-07-15(5)).</p> <p>If there is no surviving spouse, the Participant's contributions are paid to the Participant's estate (9-07-15(6)).</p>																																				
Refund of Contributions	<p>Any Participant who has contributed to the plan and terminates employment before being entitled to a pension shall be entitled to a refund of all contributions made by him to the pension system with accumulated interest. Interest of 5% per year will be credited on such contributions made after July 1, 1972. Interest of 2.5% per year will be credited on such contributions made prior to July 1, 1972.</p> <p>Any Participant electing a refund of contributions forfeits all rights to any other form of benefit under this plan (9-07-14).</p>																																				
Cost of Living Adjustments	Persons receiving pension payments shall be eligible for cost of living adjustments in an amount determined by the Board of Trustees. The adjustment may not exceed the lesser of the City employees' salary adjustment or 3% (9-07-16).																																				

# The City of Bismarck Employees' Pension Plan

## Exhibit 2

### Census Summary and Reconciliation

	1/1/2022	1/1/2023
<b>Active Participants</b>		
• Number of Participants		
- Fully Vested	301	291
- Non-vested	<u>176</u>	<u>184</u>
- Total	477	475
• Average Age	46.1	45.9
• Average Service	10.5	10.0
• Average Salary	\$ 58,605	\$ 58,143
<b>Terminated Vested Participants</b>		
• Number of Participants	77	82
• Average Age	48.1	48.8
• Average monthly benefit at Normal Retirement	\$ 843	\$ 921
<b>Retired Participants</b>		
• Number of Participants	272	286
• Average age	73.2	73.4
• Average monthly benefit	\$ 2,091	\$ 2,173

# The City of Bismarck Employees' Pension Plan

## Exhibit 3

### Participant Reconciliation

The following information provides the reconciliation from January 1, 2022 to January 1, 2023 of Plan Participants.

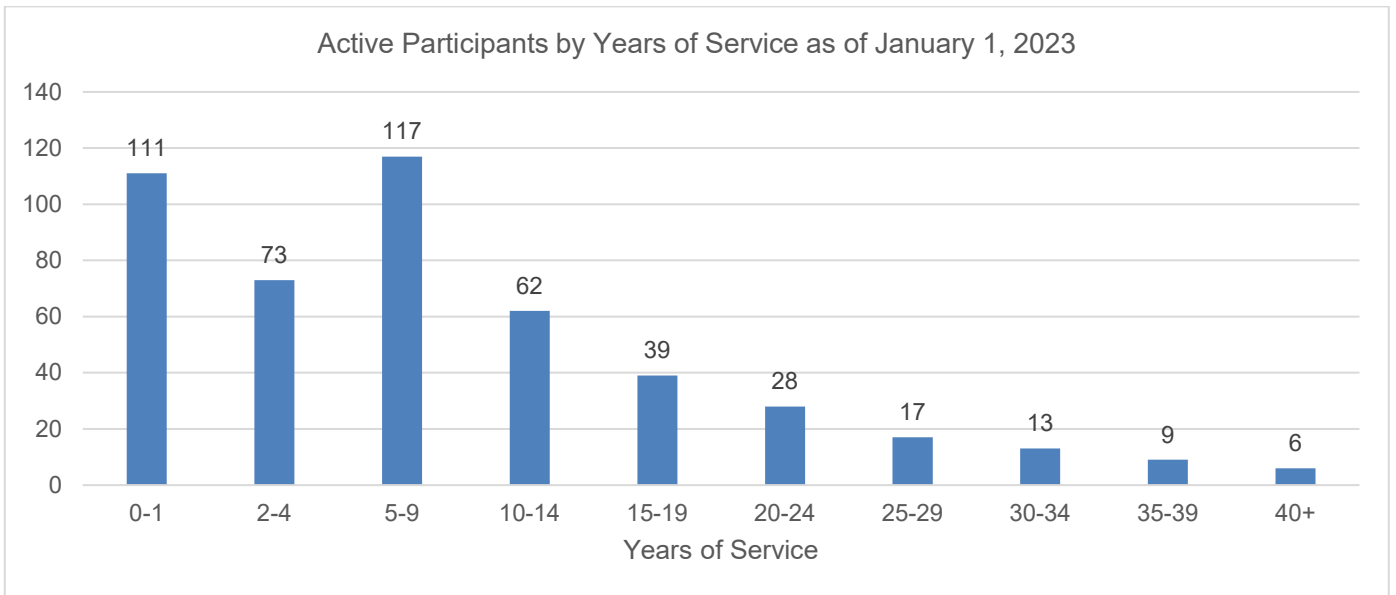
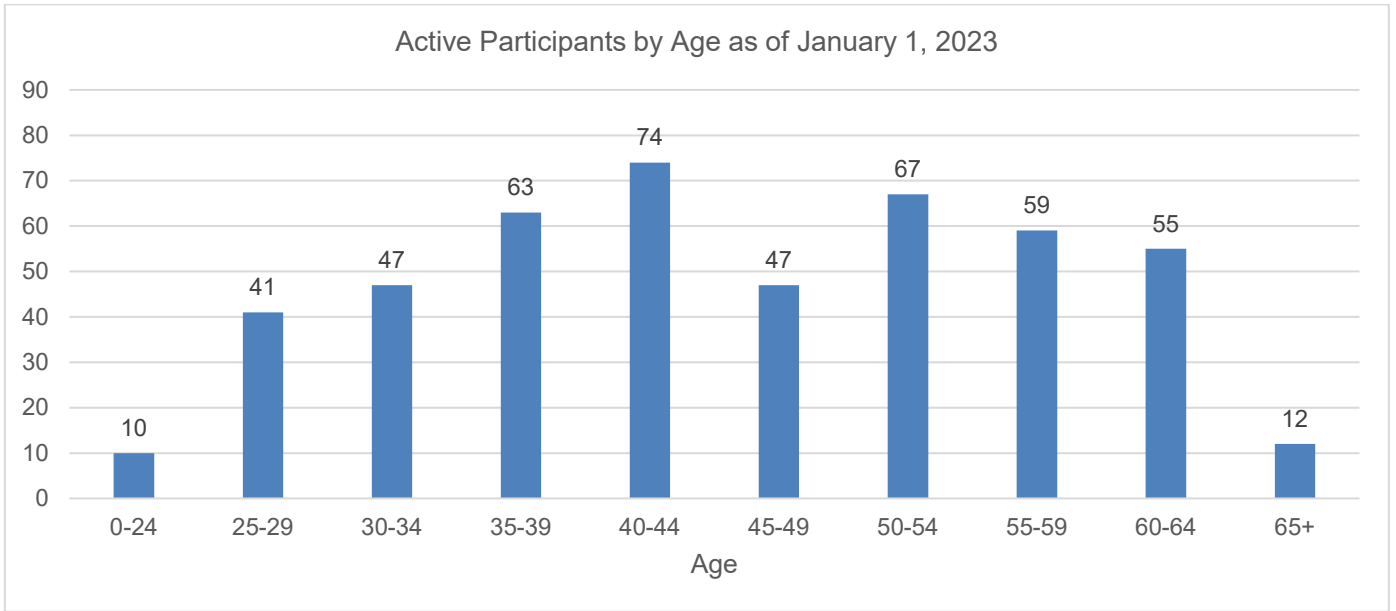
	<b>Actives</b>	<b>Terminated Vested</b>	<b>Retired</b>	<b>Disabled</b>	<b>Beneficiary</b>	<b>Total</b>
<b>1/1/2022 Participants</b>	<b>477</b>	<b>77</b>	<b>236</b>	<b>0</b>	<b>36</b>	<b>826</b>
New Participants	58	-	-	-	-	58
Rehired	-	-	-	-	-	-
Terminated vested	(15)	15	-	-	-	-
Terminated non-vested	(20)	-	-	-	-	(20)
Retired	(18)	(2)	20	-	-	-
Disabled	-	-	-	-	-	-
Died with Beneficiary	(1)	1	(3)	-	3	-
Died without Beneficiary	-	-	(4)	-	(2)	(6)
Benefit stopped	-	-	-	-	-	-
Paid-out lump sum	(5)	(9)	-	-	-	(14)
Data corrections	(1)	-	-	-	-	(1)
<b>1/1/2023 Participants</b>	<b>475</b>	<b>82</b>	<b>249</b>	<b>0</b>	<b>37</b>	<b>843</b>

During 2022 the total Participant count increased by 17 due to 58 new participants offset by 6 Participants that died without beneficiaries and 14 Participants that received a return of their employee contributions.

# The City of Bismarck Employees' Pension Plan

## Exhibit 4

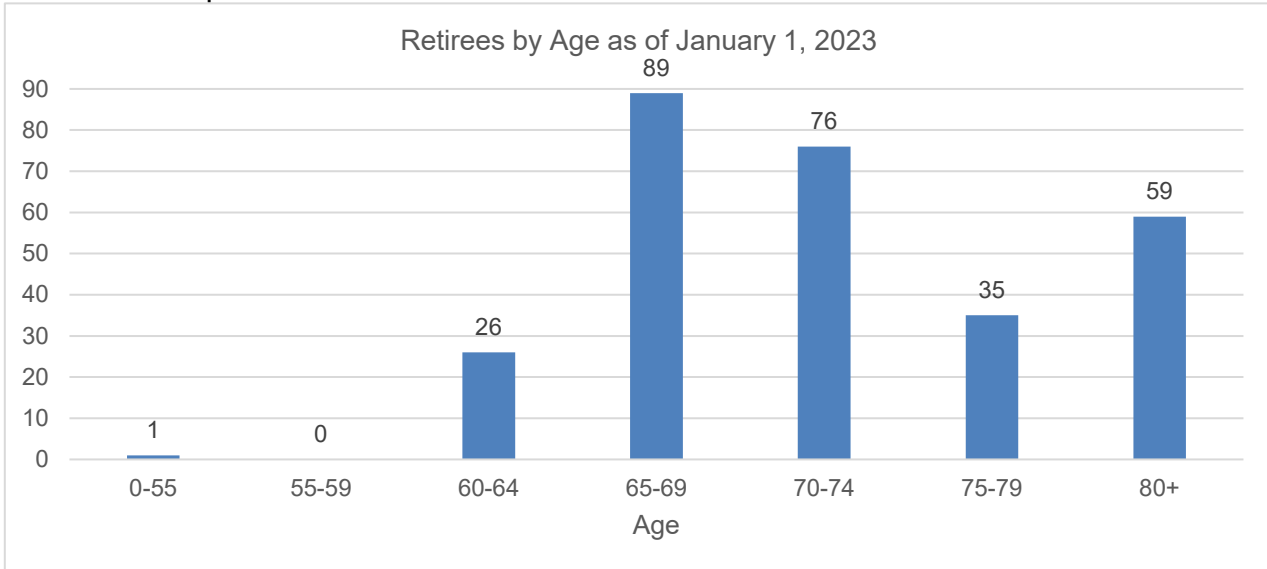
### Active Participant Data



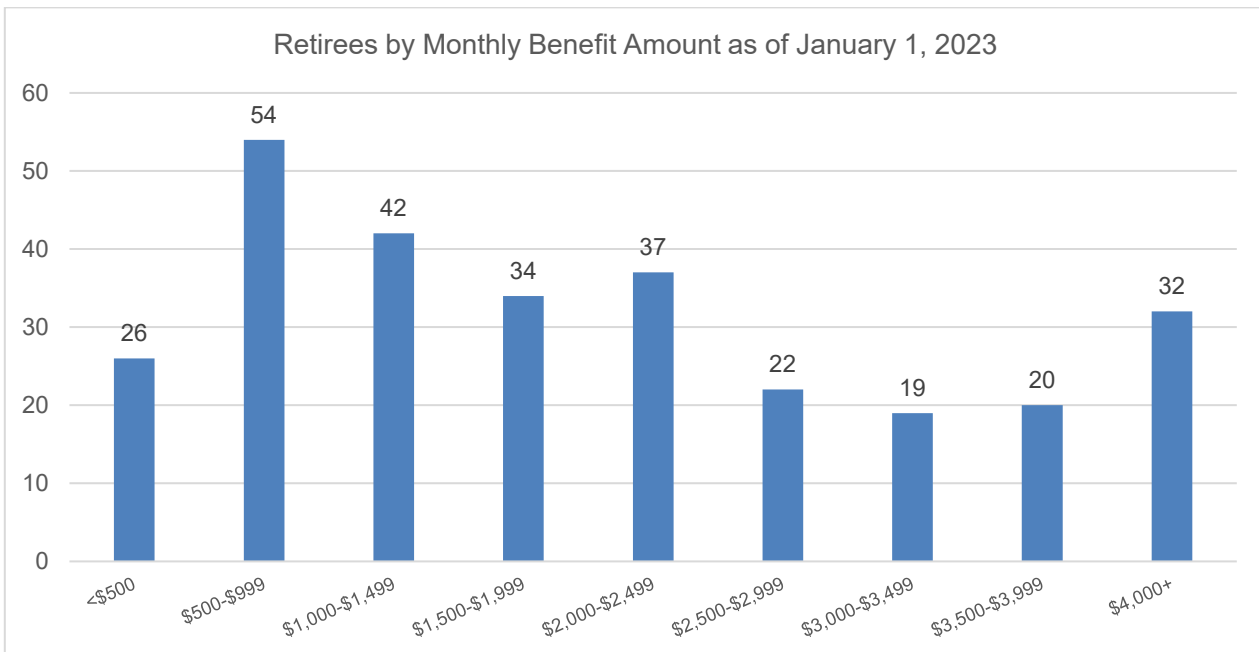
# The City of Bismarck Employees' Pension Plan

## Exhibit 5

### Retired Participant Data



Retirees include in-service retirements, disability retirements and beneficiaries with survivor benefits.



# The City of Bismarck Employees' Pension Plan

## Exhibit 6

### Reconciliation of Assets

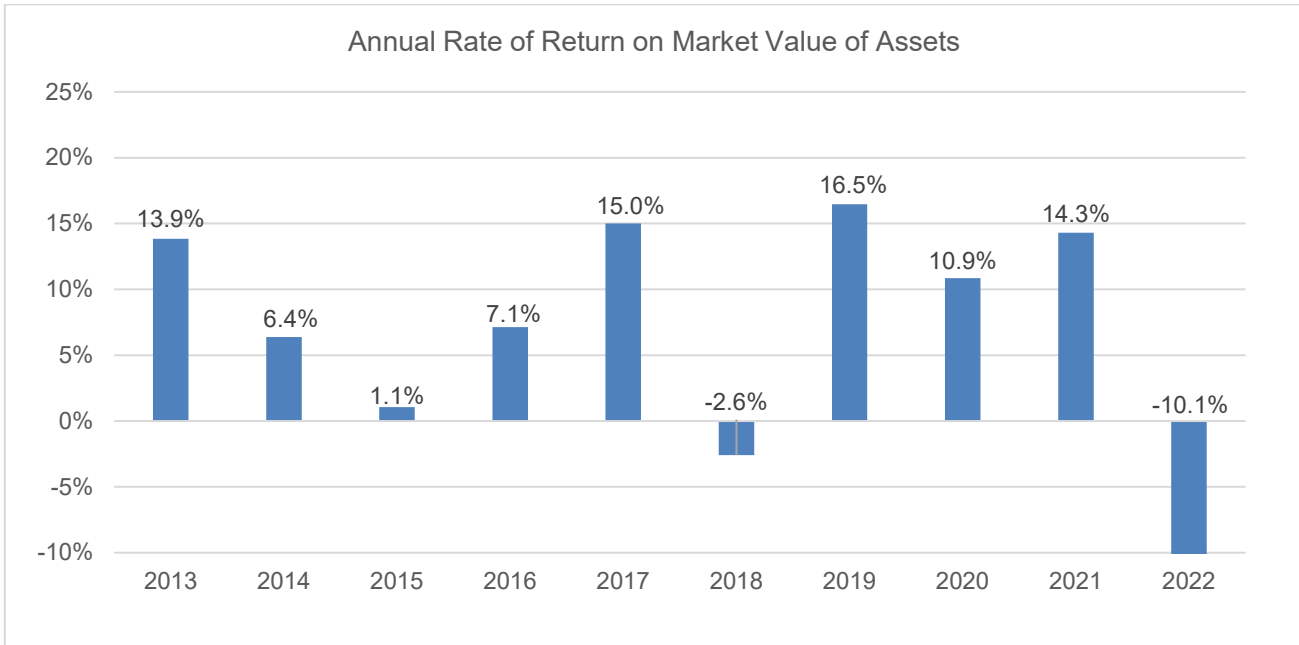
<b>1. Beginning Balance as of January 1, 2022</b>		\$ 132,135,296
<b>2. Revenue</b>		
(a) Employer's Contribution		
(i) Park & Rec. Contribution	424,793	
(ii) Department Contribution	2,761,441	
(iii) Total City Contribution	3,186,234	
(b) Employee contributions	1,492,188	
(c) Investment income (loss)	(12,891,494)	
(d) Total Revenue		\$ (8,213,072)
<b>3. Expenditure</b>		
(a) Pension Benefit Payments	\$ 7,078,446	
(b) Professional & Legal Fees	935	
(c) Management Consulting	31,735	
(d) Administration Fees	73,095	
(e) Investment Expense	289,216	
(f) Security Lending Expense	1,200	
(g) Pension Refunds	364,911	
(h) Postage	2,079	
(i) Total Expenditure		\$ 7,841,617
		\$ (16,054,689)
<b>4. Net Income (Loss)</b>		
		\$ 116,080,607
<b>5. Ending Balance as of December 31, 2022</b>		

Total assets decreased by \$16,054,689 during 2022. This increase was from an investment income loss of \$12,891,494 combined with a negative net cash flow (total contributions less expenditures) of (\$3,163,195). Some components were rounded up or down to ensure that the totals would add correctly. The rate of return on plan assets was -10.1%.

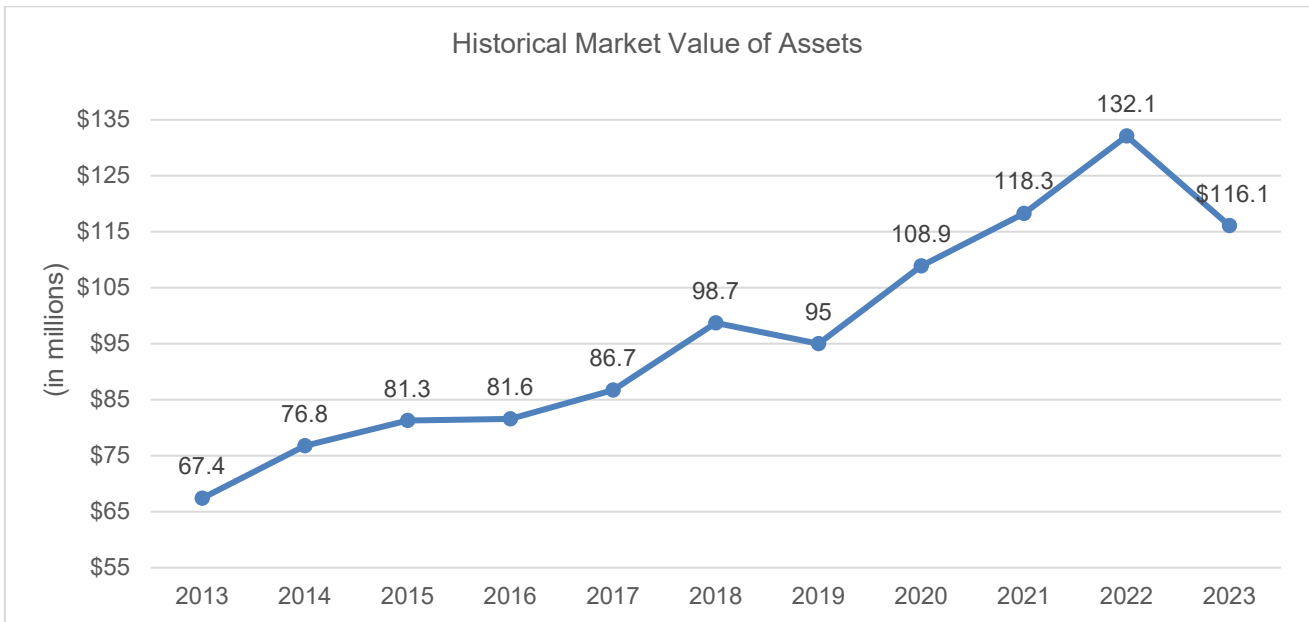
# The City of Bismarck Employees' Pension Plan

## Exhibit 7

### Historical Asset Information



Rates of return are determined after expenses.





# The City of Bismarck Employees' Pension Plan

## Exhibit 8

### Actuarial Assumptions and Methods

#### Economic Assumptions

Interest Rate                      The Fund is assumed to earn 7.25% per year, net of investment expenses (previously, 7.50%)

Salary Scale                        Active Participant Salaries are assumed to increase at 3.25% per year.

#### Demographic Assumptions

Retirement

Age	Rate of Retirement (per 1,000)	
	Male	Female
62-65	200	200
66	400	400
67	600	600
68	800	800
69+	1,000	1,000

Mortality                            Mortality rates are based on the Pub-2010 Amount Weighted Mortality Tables with Projection Scale MP-2020

Disability                            None

Withdrawal

Age	Rate of Withdrawal (per 1,000)	
	Male	Female
20-24	80	200
25-29	80	150
30-34	80	150
35-39	80	80
40-44	25	80
45-49	20	60
50-54	10	30
55+	0	0

Spouse Age                        Male Participants are assumed to be 3 years older than female spouses. Female Participants are assumed to be 3 years younger than male spouses

Marriage Rate                      85% of Participants are assumed to be married

Form of Benefit                    Married Participants receive their benefit in the form of a Joint and Two Thirds to Survivor annuity. Single Participants receive their benefit in the form of a Life Only annuity.

Expenses                            Plan expenses are assumed to be 3.0% higher than the prior year.

# The City of Bismarck Employees' Pension Plan

## Assumptions Rationale

Interest rate	The interest rate assumption is based on the expected investment return, net of expenses, provided by the City of Bismarck. We believe this is reasonable based on the results of Gallagher's assumed rate of return model using the Plan's current asset allocation.
Compensation increases	The compensation increase assumption is based on a review in 2021 of 1/1/2019 – 12/31/2020 salaries. The plan has not had large gains or losses due to this assumption since the review.
Mortality	The mortality assumption is based on a recent standard table available for public plans since the plan does not have credible experience to determine a plan-specific assumption.
Retirement	Active participant retirement rates are based on plan experience between 1/1/05 and 12/31/11. The plan has not had large gains or losses due to this assumption in the last several years.
Termination	Active participant termination rates are based on plan experience between 1/1/05 and 12/31/11. The plan has not had large gains or losses due to this assumption in the last several years.
Marriage rate and spouse age	Marriage rate and spouse age assumptions are based on plan experience between 1/1/05 and 12/31/11. The plan has not had large gains or losses due to this assumption in the last several years.

# The City of Bismarck Employees' Pension Plan

## Exhibit 8

### Actuarial Assumptions and Methods

#### Methods

Funding Method	The contribution requirement is determined using the Entry Age Normal actuarial cost method.
Actuarial Asset Value	The Actuarial Value of Assets is equal to the Market Value of Assets reserved for employee pension benefits.
Amortization method	Annual Recommended Contribution - Level percent of payroll using a 3.25% total payroll growth assumption.
Amortization period	30-year closed period (16 years remain as of 1/1/23)

#### Models

Published demographic tables	The demographic tables described above are standard published tables developed by organizations with the required expertise.
Actuarial Valuation system	Liabilities shown in this report were determined using actuarial valuation software designed by Winklevoss Technologies. This software is designed for the specific purpose of modeling pension plan liabilities and costs and is the standard pension valuation software used by Gallagher Benefit Services, Inc. The results in this report are based on various inputs into the software model, including the plan provisions and assumptions shown in this report, and demographic and financial information provided by the City of Bismarck. While the results have been tested and reviewed for overall accuracy and consistency, we have relied upon the validity of the underlying software coding in preparing this report.

# Contribution Information

# The City of Bismarck Employees' Pension Plan

## Exhibit 9

### Development of Unfunded Actuarial Accrued Liability

	1/1/2022	1/1/2023
1. Actuarial Accrued Liability		
(a) Participants receiving benefits	\$ 65,367,495	\$ 71,564,958
(b) Terminated vested participants	4,506,492	5,385,051
(c) Active Participants	61,048,427	59,720,795
(d) Total Participants = (a)+(b)+(c)	<u>\$ 130,922,414</u>	<u>\$ 136,670,804</u>
2. Adjustments for cost of living adjustments	\$ -	\$ -
3. Adjustments for assumption changes	\$ -	\$ 3,954,846
4. Actuarial Accrued Liability after adjustments = (1)(d)+(2)+(3), not less than zero	<b>\$ 130,922,414</b>	<b>\$ 140,625,650</b>
5. Actuarial Value of Assets as of end of year	<u>132,135,296</u>	<u>116,080,607</u>
6. Unfunded Actuarial Accrued Liability = (4) - (5)	\$ (1,212,882)	\$ 24,545,043

Under the Entry Age Normal actuarial cost method, the Unfunded Actuarial Accrued Liability is recalculated each year. The Actuarial Accrued Liability is valued using participant data, plan provisions and assumptions as of the valuation date. Past demographic or economic experience different than assumed is called an actuarial gain or loss and is reflected in the Unfunded Actuarial Accrued Liability. A breakdown of actuarial gains and losses from the past year is shown on the next page.

# The City of Bismarck Employees' Pension Plan

## Exhibit 10

### Development of Actuarial (Gain)/Loss

#### Development of Liability (Gain) or Loss

Actual Actuarial Liability as of January 1, 2022		\$	130,922,414
Expected changes			
Normal Cost	2,914,400		
Interest at 7.50%	10,037,761		
Cost of living adjustment	-		
Benefit payments with interest to year-end	(7,722,483)		
Total expected changes			5,229,678
Expected Actuarial Liability as of January 1, 2023		\$	136,152,092
Actual Actuarial Liability as of January 1, 2023		\$	140,625,650
Actuarial Liability (gain) or loss as of January 1, 2023		\$	4,473,558

#### Breakdown of Actuarial Liability (gain) or loss by source

Participant experience different than assumed for death, retirement, termination, disability and other amounts			204,573
Inactive mortality			992,357
Salary increases different than expected			(842,367)
New entrants			164,149
Assumption changes			3,954,846
Actuarial Liability (gain) or loss		\$	4,473,558

#### Development of Asset (Gain) or Loss

Market Value of Assets as of January 1, 2021		\$	132,135,296
Interest at 7.50%			9,910,147
Actual contributions with interest to year-end			4,853,863
Actual benefit payments with interest to year-end			(7,722,483)
Actual expenses with interest to year-end			(113,133)
Expected value of assets as of January 1, 2022		\$	139,063,690
Actual value of assets as of January 1, 2022			116,080,607
Asset (gain) or loss		\$	22,983,083

A (gain)/loss occurs when actual demographic or economic experience is different from the valuation assumptions. For example, if salary increases are greater (lower) than expected the liability will go up (down). During 2022, an actuarial liability loss of \$4,473,558 and an asset loss of \$22,983,083 resulted in an increase in UAAL of \$27,456,641.

# The City of Bismarck Employees' Pension Plan

## Exhibit 11

### Recommended Amortization Schedule

Year	Unfunded Liability at Beginning of Year	Annual Amortization Payment	Unfunded Liability at End of Year
2023	\$ 24,545,043	\$ 2,009,103	\$ 24,169,796
2024	24,169,796	2,074,399	\$ 23,697,313
2025	23,697,313	2,141,817	\$ 23,118,269
2026	23,118,269	2,211,426	\$ 22,422,589
2027	22,422,589	2,283,297	\$ 21,599,391
2028	21,599,391	2,357,504	\$ 20,636,924
2029	20,636,924	2,434,123	\$ 19,522,504
2030	19,522,504	2,513,232	\$ 18,242,444
2031	18,242,444	2,594,912	\$ 16,781,978
2032	16,781,978	2,679,247	\$ 15,125,179
2033	15,125,179	2,766,323	\$ 13,254,873
2034	13,254,873	2,856,228	\$ 11,152,547
2035	11,152,547	2,949,055	\$ 8,798,245
2036	8,798,245	3,044,899	\$ 6,170,464
2037	6,170,464	3,143,858	\$ 3,246,035
2038	3,246,035	3,246,035	\$ -

The Annual Amortization Payment is determined by amortizing the Unfunded Actuarial Accrued Liability (UAAL) over 16 years as a level percentage of total payroll. Total payroll is assumed to increase at 3.25% per year.

The City commission has approved that the City contribution will be 10.4% of salary. Please see Exhibit 13 for more details.

The Unfunded Actuarial Accrued Liability is amortized over a fixed period of time. The amortization period was reset at 30 years as of January 1, 2009. Therefore, there are 16 years remaining in the amortization period as of January 1, 2023. The resulting amortization payment is a component of the recommended contribution.

The Unfunded Actuarial Accrued Liability is scheduled to be reduced to \$0 over the amortization period. However, this schedule is met only if all assumptions are met and the actual employer contribution equals the recommended contribution each year. If assumptions are not met, an actuarial gain or loss will either decrease or increase the UAAL. Also, if the employer contribution exceeds the recommended contribution, the UAAL will be reduced more rapidly. Alternatively, if the employer contribution is less than the recommended contribution, the UAAL will reduce more slowly or even increase.

# The City of Bismarck Employees' Pension Plan

## Exhibit 12

### Development of Annual Recommended Contribution

#### Annual Recommended Contribution (Dollar Amounts)

	2022	2023
1. Total Normal Cost	\$ 2,914,400	\$ 3,040,597
2. Expected Administrative Expenses	460,166	112,315
3. Expected employee contribution	<u>(1,443,163)</u>	<u>(1,425,786)</u>
4. City Normal Cost	\$ 1,931,403	\$ 1,727,126
5. Amortization of Unfunded Actuarial Accrued Liability	<u>(96,621)</u>	<u>2,009,103</u>
6. Total annual recommended contribution	\$ 1,834,782	\$ 3,736,229
7. Interest to mid-year at 7.50% for 2022 and 7.25% for 2023	<u>68,804</u>	<u>135,438</u>
8. Recommended contribution, mid-year = (6)+(7)	\$ 1,903,586	\$ 3,871,667

#### Annual Recommended Contribution (As a Percent of Payroll)

	2022	2023
1. Total Normal Cost	10.1%	10.7%
2. Expected Administrative Expenses	1.6%	0.4%
3. Expected employee contribution	<u>-5.0%</u>	<u>-5.0%</u>
4. City Normal Cost	6.7%	6.1%
5. Amortization of Unfunded Actuarial Accrued Liability	<u>-0.3%</u>	<u>7.0%</u>
6. Total annual recommended contribution	6.4%	13.1%
7. Interest to mid-year at 7.50% for 2022 and 7.25% for 2023	<u>0.2%</u>	<u>0.5%</u>
8. Recommended contribution, mid-year = (6)+(7)	6.6%	13.6%

Percent of Payroll results are based on total expected covered payroll of \$28,310,578 in 2022 and \$28,515,711 in 2023. The expected city contribution of 10.4% of covered payroll is less than the 2023 annual recommended contribution of 13.6%.



# The City of Bismarck Employees' Pension Plan

## Exhibit 13

### 10.4% of Payroll Funding Amortization Schedule

Year	Unfunded Liability B.O.Y.	Amortization Payment E.O.Y.	Unfunded Liability E.O.Y.
2023	\$24,545,043	\$1,171,832	\$25,529,336
2024	\$25,529,336	\$1,175,865	\$27,101,982
2025	\$27,101,982	\$1,189,680	\$28,995,200
2026	\$28,995,200	\$1,213,778	\$31,169,840
2027	\$31,169,840	\$1,224,674	\$33,507,578
2028	\$33,507,578	\$1,213,307	\$36,020,646
2029	\$36,020,646	\$1,218,400	\$38,722,194
2030	\$38,722,194	\$1,225,976	\$41,626,359
2031	\$41,626,359	\$1,230,644	\$44,748,336
2032	\$44,748,336	\$1,233,687	\$48,104,461
2033	\$48,104,461	\$1,249,157	\$51,712,296
2034	\$51,712,296	\$1,270,802	\$55,590,718
2035	\$55,590,718	\$1,298,155	\$59,760,022
2036	\$59,760,022	\$1,316,682	\$64,242,024
2037	\$64,242,024	\$1,339,336	\$69,060,176
2038	\$69,060,176	\$1,366,237	\$74,239,689
2039	\$74,239,689	\$1,389,561	\$79,807,666
2040	\$79,807,666	\$1,407,929	\$85,793,241
2041	\$85,793,241	\$1,423,305	\$92,227,734
2042	\$92,227,734	\$1,444,317	\$99,144,814
2043	\$99,144,814	\$1,454,734	\$106,580,675
2044	\$106,580,675	\$1,458,059	\$114,574,226
2045	\$114,574,226	\$1,449,723	\$123,167,293
2046	\$123,167,293	\$1,436,212	\$132,404,840
2047	\$132,404,840	\$1,419,178	\$142,335,203
2048	\$142,335,203	\$1,401,519	\$153,010,343
2049	\$153,010,343	\$1,382,930	\$164,486,119
2050	\$164,486,119	\$1,355,200	\$176,822,578
2051	\$176,822,578	\$1,329,503	\$190,084,271
2052	\$190,084,271	\$1,305,301	\$204,340,591

The City commission has approved that the City contribution will be 10.4% of salary. The expected contribution for 2023 on this basis is \$2,965,634. The Annual Amortization Payment shown above represents the total expected City contribution available to reduce the UAAL at the end of that year after a reduction for payment of the annual City normal cost.

As shown above, a City contribution of 10.4% of salary per year will not amortize the UAAL over 30 years or any other period of time.

# Accounting Information

# The City of Bismarck Employees' Pension Plan

## Exhibit 14

### Statement of Accumulated Plan Benefits

A measure of the degree of progress made in funding any plan is a comparison between the Accumulated Benefit Liability and the assets accumulated to date. The Accumulated Benefit Liability measures the present value of future benefit payments. However, benefit payments are based only on service and salaries earned as of the valuation date. This liability amount is less than the Actuarial Accrued Liability used to determine the annual recommended contribution, because the AAL anticipates future salary increases for active participants. The liabilities are determined using the regular valuation assumptions. The table below shows the actuarial present value of the Accumulated Benefit Liability.

#### Actuarial Present Value of Accumulated Plan Benefits (PVAB)

	1/1/2022	1/1/2023
<b>Vested Benefits</b>		
Participants currently receiving payments	\$ 65,367,495	\$ 72,895,821
Other Participants	<u>44,372,985</u>	<u>44,994,906</u>
Total Vested accrued benefits	\$ 109,740,480	\$ 117,890,727
<b>Non-Vested accrued benefits</b>	<u>468,781</u>	<u>484,083</u>
<b>Total accrued benefits</b>	\$ 110,209,261	\$ 118,374,810

#### Statement of Changes in Accumulated Plan Benefits

<b>Beginning value, January 1, 2021</b>	\$ 110,209,261
Increases (Decreases)	
Benefits earned	\$ 3,847,927
Cost of living adjustment	0
Change in actuarial assumptions	118,374,810
Experience (gain)/loss	3,485,816
Increase for interest due to decrease in discount period	8,275,163
Benefits paid	<u>(7,443,357)</u>
Net increase (decrease)	\$ 8,165,549
<b>Ending value, January 1, 2022</b>	\$ 118,374,810

# The City of Bismarck Employees' Pension Plan

The ratio of assets to the above liabilities (known as the Funding Ratio) represents the degree to which Accumulated Benefit liability has been funded. As of January 1, 2023, the Market Value of Assets was \$116,080,607. The table below outlines the funding ratios.

## **Funding Ratio (Assets/PVAB)**

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Vested accrued benefits	98%
Total accrued benefits	98%