ACTUARIAL SECTION

FOSTER & FOSTER
ACTUARIES AND CONSULTANTS

April 26, 2023

Board of Trustees
Metropolitan Water Reclamation District Retirement Fund
111 E. Erie St.
Chicago, IL 60611

Dear Board:

We are pleased to present to the Board this report of the December 31, 2022 actuarial valuation of the Metropolitan Water Reclamation District Retirement Fund.

The valuation was performed as of December 31, 2022 to determine the current funding status and to develop the appropriate funding requirements for the applicable plan year. Successive valuations will be performed every year.

Included are the related results for GASB Statements No. 67 and No. 68. The total pension liability, net pension liability, and certain sensitivity information shown in the GASB results are based on an actuarial valuation performed as of the valuation date. The calculation of the liability for GASB results was performed for the purpose of satisfying the requirements of GASB Statements No. 67 and No. 68. Use of the results for other purposes may not be applicable and produce significantly different results.

Data Sources

In preparing this report, we have relied on personnel, plan design and asset information supplied by the Fund. The actuarial value of assets was determined based on audited financial statements supplied by Legacy Professionals LLP, the auditor for the Fund. In our opinion, the assumptions used in the valuation, as adopted by the Board of Trustees, represent reasonable expectations of anticipated fund experience. While we cannot verify the accuracy of all this information, the supplied information was reviewed for consistency and reasonableness. As a result of this review, we have no reason to doubt the substantial accuracy of the information and believe that it has produced appropriate results. This information, along with any adjustments or modifications, is summarized in various sections of this report.

Experience

The experience of the Fund over the last year is outlined in this report. Overall, the Fund experienced an actuarial loss of $76,815,834 which consists of a $54,659,203 loss on the Fund's actuarial value of assets and a $22,156,631 loss on the Fund's actuarial accrued liability. Based on the actuarial value of assets, the Fund earned 3.79% compared to the assumed 7.25% return. The primary source of liability loss was due to more retirements than expected and higher salary increases than expected. These losses were offset somewhat by higher than expected mortality experience for retirees.

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Changes Since Prior Report
The valuation reflects no changes since the prior report.

Contribution Amounts
The statutory funding objective of the Fund is to attain a funded ratio of at least 90% by the year 2050. However, an additional contribution requirement has been determined based on achieving a funding level of 100%. District contributions equal an amount that will be sufficient to meet the Fund's actuarially determined contribution requirement but shall not exceed an amount equal to the total employee contributions 2 years prior multiplied by 4.19.

Based on the results of this valuation, the actuarially determined contribution applicable for the fiscal year ending December 31, 2023 is $81,128,393. This contribution is based on a 100% funding target. Based on the pension code, the maximum employer contribution (based on the 4.19 multiplier) is $86,440,000.

We estimate that a multiplier of 3.93 is required to cover the full actuarially determined contribution requirement for the year 2023.

Illinois Public Act 97-0894 (effective 8/3/2012) provided for changes to member contribution requirements and the required multiplier. The expected member contributions reflect the same rates as the prior year valuation.

Schedules for Annual Financial Report
The report includes information and trend data schedules for use in the Annual Financial Report. The following information and exhibits are included in the body of the report and Supplementary Tables section:

- Recommended Employer Multiple
- Present Value of Future Benefits
- Membership Note Data
- Participant Statistics
- History of Change in Unfunded Accrued Liability
- History of Annuitants and Surviving Spouses Added/Dropped from Rolls
- Summary of Annuitants and Surviving Spouses by Age
- History of Average Annuities at Retirement
- Breakdown of Aggregate Accrued Liabilities

Actuarial Certification
The valuations have been conducted in accordance with generally accepted actuarial principles and practices, including the applicable Actuarial Standards of Practice as issued by the Actuarial Standards Board, and reflects laws and regulations issued to date pursuant to the provisions of Article 13, Illinois Pension Code, as well as applicable federal laws and regulations. Future actuarial measurements may differ significantly from the current measurements presented in this report for a variety of reasons including changes in applicable laws, changes in plan provisions, changes in assumptions, or plan experience differing from expectations. Due to the limited scope of the valuation, we did not perform an analysis of the potential range of such future measurements.

In our opinion, the assumptions and method used to determine the annual required contribution, as adopted by the Board of Trustees, represent reasonable expectations of anticipated plan experience.

In our opinion, the following valuation results fairly present the financial condition of the Metropolitan Water Reclamation District Retirement Fund as of December 31, 2022.

The undersigned is familiar with the immediate and long-term aspects of pension valuations and meets the Qualification Standards of the American Academy of Actuaries necessary to render the actuarial opinions contained herein. All the sections of this report are considered an integral part of the actuarial opinions.

To our knowledge, no associate of Foster & Foster, Inc. working on this report has any direct financial interest or indirect material interest in the Metropolitan Water Reclamation District, nor does anyone at Foster & Foster, Inc. act as a member of the Board of Trustees of the Metropolitan Water Reclamation District Retirement Fund. Thus, there is no relationship existing that might affect our capacity to prepare and certify this actuarial report.

We look forward to discussing the results with you.

Regards,

Jason L. Franken

Jason L. Franken, FSA, EA, MAAA

Enrollment Number: 23-06888
Foster & Foster, Inc.

ACTUARIAL PREFACE

PENSION FINANCING

The approaches used to finance pensions can be divided into two basic categories. Under Pay-As-You-Go Financing the benefits called for by the plan would be paid out directly by the employer as they become due. Most public retirement plans including the MWRD Retirement Fund use Actuarial Funding, a form of Advance Funding, which is designed to set aside money during an employee's working career so that sufficient funds are accumulated at the time of retirement to pay the employee's future pension. This method builds up a pool of assets which will generate investment income, thereby reducing the contribution requirements to meet the pension costs.

ACTUAL FUNDING

The Fund is financed by employee contributions, employer contributions and investment earnings; investment earnings and employer funding are the primary determinants of the Fund's financial status.

Through fiscal year 2013, statutory employer contributions were set at 2.19 times employee contributions made in the calendar year two years prior. Beginning in 2013, employer contributions were increased to the lesser of the amount resulting from using a 4.19 multiple, or the actuarially determined contribution requirement.

Prior to 2013, employee contributions were 9% of salary for all employees. Contributions for Tier 1 employees who became members before January 1, 2011, increased to 10% of salary in 2013, to 11% in 2014 and to 12% in 2015; the Tier 1 contribution rate remains at 12%. Contributions for Tier 2 employees who became members after January 1, 2011, are 9% of salary.

ACTUARIAL FUNDING

The Fund's actuary performs an annual actuarial valuation which includes the determination of the Actuarial Accrued Liability, the Actuarial Value of Assets and what is known as the Actuarially Determined Contribution Requirement. Actuaries use demographic data (such as employee age, salary, and service credits), economic assumptions (such as estimated salary increases and interest rates), and decrement assumptions (such as employee turnover, mortality, and retirement rates) in performing these valuations. The actuarial valuation process is generally as follows:

1. Based on the demographic data and actuarial assumptions described above, the amount and timing of benefits payable in the future are estimated by the actuary for all participants at the valuation date. Important assumptions in this computation are the turnover, retirement age, and earnings progression for active members, and mortality for all participants.

2. The actuary then calculates the actuarial present value of these future benefits. This is the amount necessary to be invested at the valuation interest rate, at the valuation date, to provide benefit payments as they come due. Each year's estimated benefit payments are discounted by an assumed interest rate to determine the present dollar value of benefits.

3. The final step is to apply a cost method assigning portions of the total value of benefits to past, present and future periods of employee service. This allocation is accomplished by the development of normal cost and accrued benefit cost.

One of the most important actuarial assumptions is the assumed rate of return on investments. The Fund's current assumed rate is 7.25% since the 12/31/19 valuation. It is believed to be appropriate based on the actuary's review of capital market assumptions and other factors which are part of the annual valuation, as well as the last experience study. An experience study will be conducted in 2023 to review experience during the years 2018-2022.

The Fund uses the entry age normal actuarial cost method with costs allocated on the basis of earnings, one of several accepted actuarial cost methods. Under this cost method, the Actuarial Present Value of the projected pension of each member included in the valuation is assumed to be funded by annual installments, equal to a level percent of the member's earnings for each year between entry age and assumed exit age. The normal cost for the member for the current year is equal to the portion of the value so determined, assigned to this year. The normal cost for the plan for the year is the sum of the normal costs of all active members. The normal cost for the year beginning January 1, 2023 was determined to be $30.8 million or 15.75% of payroll (10.87% of payroll is expected from employee contributions, 4.88% of payroll is the employer's portion, and 1.09% of payroll for administrative expenses.)

Accrued benefit cost, or the Actuarial Accrued Liability (AAL), is the portion of the present value of benefits assigned by the cost method to years of service up to the valuation date (i.e. for past service). This value changes as the member's salary and years of service change, and as some members leave and are replaced by new members. Future normal cost is the portion of the present value of benefits assigned to future years of service (i.e. for future service) and is assumed to be funded annually.

To the extent that current assets plus future normal costs (assumed to be funded annually) do not support members' expected future benefits, an Unfunded Actuarial Accrued Liability (UAAL) develops. The UAAL is generally amortized over a fixed period of time (e.g. 30 years) from the date incurred. Actuarial funding of plan benefits would require annual District (employer) contributions which at least cover the employer's normal cost, plus an amortization of the UAAL. In the past the District funded the plan according to statute as described above, which until the 2013 tax levy resulted in actual contributions that often fell short of the actuarial requirement. Legislation passed in 2012 changed the computation of the tax levy, resulting in higher District contributions that more closely approximate the actuarial funding requirement. The legislation which increased both the employer and employee contribution requirements is expected to eliminate the UAAL by the year 2050.

The information following this Preface is from the December 31, 2022 actuarial valuation performed by Foster & Foster, which was based upon:

a) Membership data - provided by Fund staff

b) Assets of the Fund - audited financial statements

c) Actuarial Method – entry age actuarial cost method, approved by the Board

d) Actuarial Assumptions – summarized in this section, approved by the Board

SUMMARY OF VALUATION RESULTS

	December 31, 2022	December 31, 2021
Total Actuarial Liability	$ 2,811,600,986	$ 2,756,489,008
Actuarial Value of Assets	1,624,081,682	1,617,809,696
Unfunded Actuarial Liability	$ 1,187,519,304	$ 1,138,679,312
Funded Ratio	57.8%	58.7%
Fair Value of Assets	$ 1,437,656,196	$ 1,724,179,948
Unfunded Liability (FVA basis)	$ 1,373,944,790	$ 1,032,309,060
Funded Ratio (FVA basis)	51.1%	62.5%
Employer Normal Cost as % of Payroll:		
Tier 1 Benefits	6.07%	6.23%
Tier 2 Benefits	2.91%	2.89%
Administrative Expenses	1.09%	0.96%
Total Employer Normal Cost	5.97%	6.05%
Applicable Fiscal Year[1]	**2023**	**2022**
Actuarially Determined Contribution	$ 81,128,393	$ 76,680,499
Contribution Requirement For Fiscal Year[2]	$ 81,128,393	$ 76,680,499
Expected Employer Contribution for Fiscal Year	$ 86,440,000	$ 87,915,000

[1] The contribution requirements are levied in the applicable fiscal year and deposited into the Fund during the following fiscal year.

[2] See details of calculation on page 82.

Source: Foster & Foster

ACTUARIAL LIABILITY AND FUNDED RATIO

Below are details regarding the actuarial liability and funded ratio as of December 31, 2022.

1.	Present Value of Future Benefits	$	3,073,891,634
2.	Active Members		
	Retirement	$	622,632,557
	Termination		22,308,082
	Death		22,495,173
	Disability		6,938,594
	Total	$	674,374,406
3.	Members Receiving Benefits		
	Retirement Annuities	$	1,870,733,669
	Survivor Annuities/Children		253,192,616
	Total	$	2,123,926,285
4.	Inactive Members	$	13,300,295
5.	Total Actuarial Liability (2. + 3. + 4.)	$	2,811,600,986
6.	Actuarial Value of Assets	$	1,624,081,682
7.	Unfunded Actuarial Liability	$	1,187,519,304
8.	Funded Ratio		57.8%

Source: Foster & Foster

EMPLOYER'S NORMAL COST

Below is a summary of the employer's share of the normal cost for the year beginning January 1, 2023.

	Tier 1		Tier 2		Total	
Normal Cost	Normal Cost	Percent of Total Payroll	Normal Cost	Percent of Total Payroll	Normal Cost	Percent of Total Payroll
Retirement	$ 19,284,190	15.80%	$ 5,934,887	8.05%	$ 25,219,077	12.89%
Termination	1,064,173	0.87%	1,543,993	2.10%	2,608,166	1.33%
Death	1,338,372	1.10%	914,092	1.24%	2,252,464	1.15%
Disability	363,319	0.30%	383,643	0.52%	746,962	0.38%
Total Normal Cost	$ 22,050,054	18.07%	$ 8,776,615	11.91%	$ 30,826,669	15.75%
Expected Member Contributions	$ 14,643,443	12.00%	$ 6,631,633	9.00%	$ 21,275,076	10.87%
Employer's Share of Normal Cost	$ 7,406,611	6.07%	$ 2,144,982	2.91%	$ 9,551,593	4.88%
Expected Administrative Expenses					$ 2,134,803	1.09%
Employer's Share of Normal Cost, adjusted for expected administrative expenses					$ 11,686,396	5.97%
Pensionable Payroll	$ 122,028,694		$ 73,684,815		$ 195,713,509	

Source: Foster & Foster

ACTUARIALLY DETERMINED CONTRIBUTION

The actuarially determined contribution requirement based on the provisions applicable for fiscal years 2013 and later, according to section 13-503 of Article 13 of the Illinois Pension Code, is below.

1.	Employer's Share of Normal Cost	$	11,686,396
2.	Amortization Payment (annual amount to amortize 100% of the unfunded liability by 2050)		
	Actuarial Liability	$	2,811,600,986
	Actuarial Assets	$	1,624,081,682
	Unfunded Accrued Liability	$	1,187,519,304
	Amortization Period		28 years
	Amortization Payment	$	69,441,997
3.	Actuarially Determined Contribution for Year Beginning January 1, 2023	$	81,128,393
	as a percentage of pensionable payroll		41.45%
4.	District's Funding Policy (4.19 x Total Member Contributions for two years prior)	$	86,440,000
	as a percentage of pensionable payroll		44.17%
5.	Statutory Employer Contribution (lesser of 3 and 4)	$	81,128,393

Source: Foster & Foster

UNFUNDED ACTUARIAL LIABILITY

1.	Unfunded Actuarial Accrued Liability (UAAL) as of December 31, 2021	$ 1,138,679,312
2.	Employer Normal Cost, Developed as of December 31, 2021	11,326,385
3.	Expected Interest (7.25%) on 1. and 2.	83,375,413
4.	Employer Contributions	118,458,646
5.	Expected Interest (7.25%, mid-year) on 4.	4,218,995
6.	Expected UAAL as of December 31, 2022 (1)+(2)+(3)-(4)-(5)	1,110,703,470
7.	Change in UAAL Due to Actuarial (Gain)/Loss, by component	
	Increase in UAAL due to investment return lower than assumed	54,659,203
	Increase in UAAL due to salary increases higher than assumed	9,908,277
	Increase in UAAL due to decrement experience	11,026,740
	Decrease in UAAL due to inactive mortality experience	(4,725,161)
	Increase in UAAL due to other changes	5,946,775
	Net increase in UAAL due to actuarial experience	76,815,834
8.	Change in UAAL Due to Assumption Changes	-
9.	Unfunded Actuarial Accrued Liability as of December 31, 2022	$ 1,187,519,304

Source: Foster & Foster

PARTICIPANT DATA

Participant Information	December 31, 2022	December 31, 2021	Change
Number Active Members - Total	1,747	1,737	0.6%
Number Active Members - Fully Vested	954	965	-1.1%
Number Receiving Benefits			
Retirement Annuities	1,915	1,918	-0.2%
Surviving Spouse Annuities	547	543	0.7%
Children's Annuities	18	21	-14.3%
Number Inactive Members - Total	131	128	2.3%
Number Inactive Members - Vested	35	34	2.9%
Total Members	4,358	4,347	0.3%
Total Pensionable Salary	$ 195,713,509	$ 187,213,026	4.5%
Active Statistics – Tier 1			
Number	979	1,044	-6.2%
Average Age	54.03	53.71	0.6%
Average Service	18.51	18.30	1.1%
Total Pensionable Salary	$ 122,028,694	$ 123,516,853	-1.2%
Average Salary	$ 124,646	$ 118,311	5.4%
Active Statistics – Tier 2			
Number	768	693	10.8%
Average Age	44.12	43.72	0.9%
Average Service	5.30	4.91	8.0%
Total Salary	$ 74,960,877	$ 64,296,858	16.6%
Average Salary	$ 97,605	$ 92,780	5.2%
Pensionable Salary	$ 73,684,815	$ 63,696,173	15.7%
Average Pensionable Salary	$ 95,944	$ 91,914	4.4%
Annual Benefit Payments for Members Receiving Benefits			
Retirement Annuities	$ 158,591,403	$ 154,398,273	2.7%
Surviving Spouse Annuities	$ 31,277,760	$ 29,684,725	5.4%
Children's Annuities	$ 108,000	$ 126,000	-14.3%

Source: Foster & Foster

ACTUARIAL ASSUMPTIONS AND METHODS

Below is a summary of the actuarial assumptions for the December 31, 2022 valuation. An experience study was performed in September of 2018 based on data for the period December 31, 2012 through December 31, 2017. The assumptions below are based on the experience study and were recommended by Foster & Foster Actuaries, and adopted by the Board of Trustees effective December 31, 2018.

Interest Rate	7.25%
Mortality Rates – Healthy & Disabled Lives	RP-2000 Combined Healthy Mortality Table with Generational Mortality Improvements (Scale AA). Female rates are adjusted by a factor of 1.04 and male rates are unadjusted.
Cost-of-Living Adjustment - Annuitants	
Members Hired On Or After January 1, 2011	1.25%
Members Hired Before January 1, 2011	3.00%
Inflation Rate	2.50%
Salary Increases	See Table 1
Retirement Rates	See Table 2
Termination Rates	See Table 3
Disability Rates	See Table 4
Load for Reciprocal Benefits	1.5% of active member costs and liabilities.
Assumed Administrative Expenses	Administrative expenses paid from the trust during the prior year.
Percent Married	76%
Spousal Age Difference	Spouse of male member assumed to be 4 years younger than member; Spouse of female member assumed to be 4 years older than member.

ACTUARIAL ASSUMPTIONS AND METHODS, CONTINUED

Actuarial Cost Method	Entry Age Normal, with costs allocated on basis of earnings. Actuarial gains and losses are reflected in the unfunded actuarial liability.
Actuarially Determined Contribution Requirement	Section 13-503. Employer's normal cost plus the annual amount needed to amortize the unfunded liability by the year 2050 as a level percent of payroll. The funding goal is to attain a funded ratio of at least 100% by the year 2050.
Actuarial Asset Method	Fair value of assets adjusted by the unrecognized investment gains and losses for each of the five years prior to the valuation date. Gains and losses are recognized at a rate of 20% per year. Actuarial Assets shall not be less than 80% nor greater than 120% of Fair Value of Assets.
Payroll Growth	3.00%
Assumed Administrative Expenses	Administrative expenses paid from the trust during the prior year.
Source of Data	Data and audited financial information is provided by the Fund.
Valuation Date	December 31, 2022.

Changes in Funding Assumptions/Methods Since the Prior Valuation

The valuation reflects no assumption or method changes since the prior year.

ACTUARIAL ASSUMPTIONS AND METHODS, CONTINUED

Table 1 – Salary Increase Rates

Service	Salary Increase Rate
0	7.00%
1	6.50%
2	5.75%
3	5.50%
4	5.25%
5	6.00%
6	5.00%
7	4.75%
8	4.50%
9	4.25%
10	5.00%
11 - 14	4.00%
15	5.00%
16 - 19	4.00%
20	5.00%
21+	3.50%

Table 2 – Retirement Rates

Age	Retirement Rate
50 - 59	7%
60	20%
61 - 64	10%
65	15%
66	18%
67	25%
68	15%
69	30%
70	35%
71 - 74	20%
75	100%

ACTUARIAL ASSUMPTIONS AND METHODS, CONTINUED

Table 3 – Termination Rates

Service	Male Rate	Female Rate
0	5.00%	7.75%
1	3.50%	6.75%
2	3.50%	5.75%
3	2.60%	4.75%
4	2.24%	4.52%
5	2.15%	4.49%
6	1.75%	4.19%
7	1.70%	3.94%
8	1.65%	3.74%
9	1.55%	3.54%
10	1.55%	3.34%
11	1.55%	3.14%
12	1.45%	2.94%
13	1.40%	2.85%
14	1.35%	2.52%
15	1.20%	2.52%
16+	1.00%	2.52%

Table 4 – Disability Rates (Sample Rates)

Age	Disability Rate
20	0.002%
25	0.003%
30	0.006%
35	0.014%
40	0.033%
45	0.065%
50	0.120%
55	0.225%
60	0.490%
65	0.000%

PLAN PROVISIONS

The following describe and reflect provisions in effect as described in Article 13 of the Illinois Pension Code. The provisions below reflect changes included in Public Act 96-0889 and Public Act 96-1490, which created the second "tier" of benefits for members hired on or after January 1, 2011 and provided clarifying changes.

Eligibility	All employees of the District whose duties indicate service during the calendar year for a minimum of 120 days are eligible.
Normal Retirement Eligibility	Hired before January 1, 2011: Age 60 and 5 years of service Hired on or after January 1, 2011: Age 67 and 10 years of service
Normal Retirement Benefit	The annual benefit payable immediately is equal to the sum of: (a) 2.2% of Average Final Salary for each year of service up to 20 years. (b) 2.4% of Average Final Salary for each year of service in excess of 20 years The benefit shall not exceed 80% of Average Final Salary.
Early Retirement Eligibility	Hired before January 1, 2011: Age 55 (50 if hired before June 13, 1997) and 10 years of service Hired on or after January 1, 2011: Age 62 and 10 years of service
Early Retirement Benefit	Normal Retirement Benefit reduced as follows: Hired before January 1, 2011: If member retires before reaching age 60 with less than 30 years of service, 0.5% for each full month the member is less than age 60 or service is less than 30 years, whichever is less. Hired on or after January 1, 2011: 0.5% per month the member is less than age 67
Deferred Retirement Eligibility	Tier 1: Age 55 (50 if hired before June 13, 1997) and 5 years of service. Tier 2: 10 years of service

Deferred Retirement Benefit	The annual benefit payable at the following ages: Hired before January 1, 2011: Age 62, if withdraw on or after age 55 (50 if hired before June 13, 1997) with at least 5 years of service and less than 10 years Age 55 (50 if hired before June 13, 1997), if withdraw with 10 years of service Hired on or after January 1, 2011: Age 62, if withdraw with 10 years of service The annual benefit amount equals the Normal Retirement Benefit reduced with Early Retirement Reductions.
Minimum Retirement Annuity	10 years of service: $500 per month plus $25 per month for each year of service in excess of 10 years, not to exceed $750 with 20 years of service Less than 10 years of service or retirement before age 60: $250 per month
Duty Disability Eligibility	Member incurs injury or sickness due to employment with the District and is compensable under the Workers' Compensation Act or the Occupational Disease Act.
Duty Disability Benefit	75% of salary earned on the date of disability, less the amount paid by Workers' Compensation Benefit is 50% of salary if disability resulted from physical defect or disease that existed at the time injury was sustained. Benefits are payable during period of disablement, but not beyond attainment of age 65. If disability occurs at age 60 or older, benefits are payable for a maximum of 5 years.
Ordinary Disability Eligibility	Member becomes disabled due to any cause other than injury or illness incurred in the performance of duty.
Ordinary Disability Benefit	50% of earnable salary at the date of disability Member may receive ordinary disability benefits for a maximum period of the lesser of 25% of member's actual service prior to disablement or 5 years.

Surviving Spouse Annuity Eligibility	Hired before June 13, 1997: Immediately eligible if married to member on date of member's death while in service or married to member on member's date of termination from service and remained married until member's death. Dissolution of marriage after retirement shall not divest the member's spouse of entitlement if marriage was in effect for at least 10 years on the date of retirement. Hired on or after June 13, 1997: Eligible after 3 years of service. Conditions for marriage described for members hired prior to June 13, 1997 apply.
Surviving Spouse Benefit	Hired before January 1, 2011: Retirement annuity earned at the time of death multiplied by a factor of 60% plus 1% for each year of member's total service, to a maximum of 85%. If hired after January 1, 1992, annuity is reduced by 0.25% for each full month spouse is younger than member to maximum reduction of 60%. Discount is reduced by 10% for each year marriage is in effect. Hired on or after January 1, 2011: 66 2/3% of retirement annuity earned at the time of death.
Minimum Surviving Spouse Annuity	Member with 10 years of service: greater of (a) $500 per month plus $25 per month for each year of service in excess of 10, not to exceed $750 per month, or (b) 50% of the retirement annuity of member at time of death. Member with less than 10 years of service: $250 per month.
Children's Annuity Eligibility	Member parent dies in service or deceased parent was former member with at least 10 years of service. Child is unmarried and less than age 18 (23, if full-time student).
Children's Annuity Benefit	$500 per month for each child if have living parent and $1,000 per month for each child if neither parent is living to a maximum of $5,000 per month.

Annual Increase	Hired before January 1, 2011: Retirement annuity is increased on the anniversary of retirement by 3% of the monthly annuity payable at the time of increase. Spouse annuity is increased on the earlier of the anniversary of the member's death or retirement (whichever occurs first) by 3% of the monthly annuity payable at the time of increase. Hired on or after January 1, 2011: increase percentage is the lesser of 3% or ½ the increase in CPI-U during the previous calendar year. Increase is based on the originally granted retirement or spouse's annuity.

Member Contributions – retiree annuity

Pay period:	Contribution % Annuity:	Contribution % Annual Inc.:
Before January 1, 2013	7.0%	0.5%
During calendar year 2013	7.5%	1.0%
During calendar year 2014	8.0%	1.5%
During calendar year 2015 and until fund is 90% funded	8.5%	1.5%
After fund is 90% funded	7.0%	0.5%

Members hired on or after January 1, 2011 have member contributions of 7.5% (7.0% of pay for the annuity and 0.5% of pay for annual increases).

Member Contributions – spouse annuity

Pay period:	Contribution percentage:
Before January 1, 2015	1.5%
During calendar year 2015 and until fund is 90% funded	2.0%
After fund is 90% funded	1.5%

Members hired on or after January 1, 2011 contribute 1.5% of pay.

Refund to Member upon Termination	Hired before January 1, 2011: Eligible for refund of all member contributions without interest if under age 55 (50 if hired before June 13, 1997); if age 60 with less than 20 years of service; or if 60 with less than 5 years of service. Upon receipt of refund, member forfeits rights to benefits from the Fund. Hired on or after January 1, 2011: Eligible for refund of all member contributions without interest if under age 62; or if have less than 10 years of service on termination. Upon receipt of refund, member forfeits rights to benefits from the Fund.
Refund for Surviving Spouse's Annuity	Members unmarried at the time of retirement will receive a refund of contributions for spouse annuity with interest at 3% per year, compounded annually.
Refund of Remaining Amounts	If upon death the total amount contributed by the member with 3% interest per year has not been paid to the member, the spouse or designated beneficiaries or estate receives a refund of the excess amount.
Required Contribution – Illinois Pension Code	Lesser of actuarially determined contribution and 4.19 multiplied by total member contributions for the two years prior.
District's Funding Policy	Effective August 27, 2014, the District implemented a policy of contributing an amount equal to 4.19 multiplied by total member contributions for the two years prior until the Fund reaches a funded ratio of 100%.
Pension Service	Any employment, excluding overtime or extra service for which salary is received.
Average Final Salary	Hired before January 1, 2011: Highest average annual salary for any 52 consecutive bi-weekly pay periods within the last 10 years of service immediately preceding the date of retirement. Hired on or after January 1, 2011: Highest average annual salary for 96 consecutive months of service within last 120 months of service, limited to $106,800 (automatically increased by lesser of 3% or ½ the increase in CPI-U during the previous calendar year).

Pensionable Salary	Salary paid to a Fund member for service to the District or to the Fund, including salary paid for vacation and sick leave and any amounts deferred under a deferred compensation plan established under the Code, but excluding the following: payment for unused vacation or sick leave, overtime pay, termination pay and any compensation in the form of benefits other than salary. Salary for members hired on or after January 1, 2011 is subject to the salary limitations established in the Illinois Pension Code. The statutory salary limitation is \$119,892.41 for calendar 2022 and \$123,489.18 for calendar 2023.

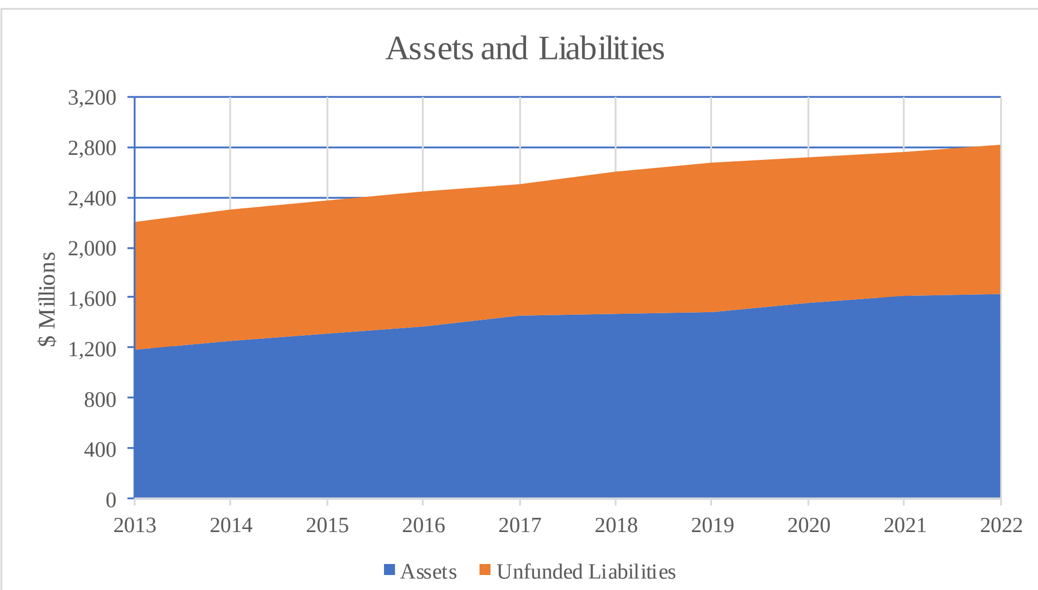
Changes in Fund Provisions Since the Prior Valuation

- None

SCHEDULE OF FUNDING PROGRESS
(Actuarial Funding - Going Concern, Entry Age Normal Method)

Year End	Total Actuarial Accrued Liability (AAL)	Actuarial Value of Assets [1]	Funded Ratio	Unfunded AAL (UAAL)	Active Pensionable Payroll[3]	UAAL as a % of Payroll
2013	$2,194,911,693	$1,188,503,716	54.1%	$1,006,407,977	$169,375,857	594.2%
2014 [2]	2,296,438,698	1,263,287,068	55.0%	1,033,151,630	176,183,941	586.4%
2015	2,371,031,195	1,307,982,039	55.2%	1,063,049,156	177,507,159	598.9%
2016	2,443,291,644	1,372,361,950	56.2%	1,070,929,694	182,640,163	586.4%
2017	2,497,890,179	1,456,195,876	58.3%	1,041,694,303	184,385,188	565.0%
2018 [2]	2,601,163,632	1,470,308,639	56.5%	1,130,854,993	187,849,708	602.0%
2019	2,666,221,630	1,489,266,144	55.9%	1,176,955,486	189,961,010	619.6%
2020	2,714,192,284	1,556,056,167	57.3%	1,158,136,117	188,072,970	615.8%
2021	2,756,489,008	1,617,809,696	58.7%	1,138,679,312	187,213,026	608.2%
2022	2,811,600,986	1,624,081,682	57.8%	1,187,519,304	195,713,509	606.8%

[1] Assets are stated using 5-year smoothing Actuarial Asset Method.
[2] Change in actuarial assumptions.
[3] Pensionable payroll is annualized based on actual payroll paid to active members on the last paydate of the year.



The table and graph above illustrate the growth of the unfunded liability over the last ten years. The unfunded AAL (UAAL) as a percentage of active member payroll, the last column of the table above, provides a helpful index which shows the smaller the ratio, the stronger the Fund. Observation of the trend of this index will give an indication of whether the Fund is becoming financially stronger or weaker.

SOLVENCY TEST

The prioritized solvency test is another means of checking a system's progress under its funding program. It shows the percentage of future benefit promises that are covered by the current Actuarial Value of Assets. In a short-term solvency test the plan's present assets (cash and investments) are compared with actuarial accrued liabilities classified into the following categories:

1. liability for active member contributions on deposit;
2. liability for future benefits to present retired lives; and
3. liability for the employer financed portion of service already rendered by active members.

If a system has been following the discipline of level percent of payroll financing, the liabilities for active member contributions on deposit (i.e. the present value of liability 1) and the liabilities for future benefits to present retired lives (i.e. the present value of liability 2) will be fully covered by present assets (except in rare circumstances). In addition, the liabilities for the employer financed portion of benefits for present active members (i.e. the present value of liability 3) will normally be partially covered by the remainder of present assets. In addition, if a system has been using a level cost financing, the funded portion of the present value of liability 3 will increase over time. The Fund has not received employer contributions according to level cost financing, but rather has been financed in accordance with Illinois statutes.

	Actuarial Accrued Liabilities				Portion of Liabilities Covered by Assets		
	(1)	(2)	(3)		(1)	(2)	(3)
Year Ended	Active and Inactive Member Contributions	Retirees and Survivors	Active and Inactive Members (ER Financed)	Actuarial Value of Assets	Active and Inactive Member Contributions	Retirees and Survivors	Active and Inactive Members (ER Financed)
12/31/2013	223,354,127	1,463,856,177	507,701,389	1,188,503,716	100%	66%	0%
12/31/2014	231,430,077	1,541,326,692	422,154,924	1,263,287,068	100%	67%	0%
12/31/2015	236,967,954	1,616,195,435	517,867,805	1,307,982,039	100%	66%	0%
12/31/2016	244,239,334	1,676,732,070	522,320,240	1,372,361,950	100%	67%	0%
12/31/2017	247,730,731	1,745,598,298	504,561,150	1,456,195,876	100%	69%	0%
12/31/2018	251,845,144	1,843,563,888	505,754,600	1,470,308,639	100%	66%	0%
12/31/2019	251,719,321	1,929,940,867	484,561,442	1,489,266,144	100%	64%	0%
12/31/2020	249,921,777	2,013,763,878	450,506,629	1,556,056,167	100%	65%	0%
12/31/2021	249,356,777	2,082,783,118	424,349,113	1,617,809,696	100%	66%	0%
12/31/2022	254,312,023	2,123,926,285	433,362,678	1,624,081,682	100%	64%	0%

Source: Foster & Foster

HISTORY OF CHANGE IN UNFUNDED LIABILITY
(Actuarial Funding - Going Concern, Entry Age Normal Method)

Year	Salary Scale	Investment Returns[1]	Employer Contribution[2]	Legislative Amendments
2013	$ (6,368,436)	$ (48,963,802)	$ 3,395,524	$ -
2014	(5,667,229)	(26,867,032)	16,960,113	-
2015	(3,201,181)	3,056,008	17,070,881	-
2016	(844,096)	(15,960,567)	9,554,045	-
2017	(11,576,111)	(27,925,002)	154,718	-
2018	(7,369,068)	40,260,410	540,397	-
2019	(4,517,433)	23,071,682	4,872,323	-
2020	(6,558,614)	(10,483,804)	(13,370,672)	-
2021	(7,730,245)	(29,048,737)	4,365,008	-
2022	9,908,277	54,659,203	(27,975,842)	-
	$ (43,924,136)	$ (38,201,641)	$ 15,566,495	$ -

Year	Changes in Actuarial Assumptions	(see assumption reference key 3)	All Other Miscellaneous Experience	Total Increase (Decrease) in Unfunded Liability
2013			$ (1,423,368)	$ (53,360,082)
2014	32,494,969	(i, m, r, s , t, d)	9,822,832	26,743,653
2015	-		12,971,818	29,897,526
2016	-		15,131,156	7,880,538
2017	-		10,111,004	(29,235,391)
2018	37,438,859	(i, m, r, s, t)	18,290,092	89,160,690
2019	-		22,673,921	46,100,493
2020	-		11,593,721	(18,819,369)
2021	-		12,957,169	(19,456,805)
2022	-		12,248,354	48,839,992
	$ 69,933,828		$ 124,376,699	$ 127,751,245

1 Represents investment income deficiency (excess) over expected returns.

2 Represents employer contributions deficiency (excess) from normal cost plus interest.

3 Key to changes in assumptions:

i = interest rate	d=disability assumption
r = retirement rates	s = salary
m = mortality	t = termination rates

The table above illustrates that over the last ten years, the unfunded liability has increased by $127.8 million. Of this increase, $124.4 million has been due to miscellaneous actuarial experience, and smaller portions due to changes in actuarial assumptions and to employer contributions that were less than normal cost plus interest on the UAAL. These increases in the unfunded liability were partially offset by reductions of $43.9 million for overall salary increases being less than assumed and $38.2 million due to investment returns being higher than assumed, over the last ten years.

During the year 2022 the unfunded liability increased by $48.8 million; components of this change are shown above.

HISTORY OF ACTIVE MEMBER VALUATION DATA

Year End	Members in Service	% Change	Annual Pensionable Payroll[1]	% Change	Average Salary	% Change	Actuarial Salary % Increase[3]	CPI Chicago[2]
2013	1,858	0.1	$ 169,375,857	3.4	$ 91,160	3.3	5.0	1.1
2014	1,873	0.8	176,183,941	4.0	94,065	3.2	Range	1.7
2015	1,846	(1.4)	177,507,159	0.8	96,158	2.2	Range	(0.3)
2016	1,843	(0.2)	182,640,163	2.9	99,099	3.1	Range	0.7
2017	1,835	(0.4)	184,385,188	1.0	100,482	1.4	Range	1.9
2018	1,832	(0.2)	187,849,708	1.9	102,538	2.0	Range	1.8
2019	1,817	(0.8)	189,961,010	1.1	104,547	2.0	Range	1.5
2020	1,769	(2.6)	188,072,970	(1.0)	106,316	1.7	Range	1.1
2021	1,737	(1.8)	187,213,026	(0.5)	107,780	1.4	Range	4.2
2022	1,747	0.6	195,713,509	4.5	112,028	3.9	Range	7.6
10 year average change:		(0.6) %		1.8 %		2.4 %		2.1 %

[1] Payroll is annualized based on actual pensionable salary paid to active members on the last pay date of the year.
[2] Represents average annual change in Consumer Price Index (CPI-U All Urban Consumers for Chicago-Gary-Kenosha) per the U.S. Bureau of Labor Statistics through 2016. The Index was renamed to CPI-U All Urban Consumers for Chicago-Naperville-Elgin, IL-IN-WI in 2017.
[3] As of the December 31, 2014 valuation, the salary increase assumption was updated from a flat 5.0% to a table of rates ranging from 3.5%-7.0% based on years of service.

HISTORY OF EMPLOYER CONTRIBUTIONS

Year Ended	Actuarially Determined Contribution for Fiscal Year End	Maximum Employer Contribution	Employer Contribution[1]	% of Actuarially Determined Contribution Contributed	Estimated Multiplier Necessary to Match ADC
12/31/2013	$ 74,774,148	$ 62,984,000	$ 92,944,381	124.30	4.97
12/31/2014	69,924,438	61,654,000	73,906,168	105.69	4.75
12/31/2015	62,603,576	70,772,000	71,041,361	113.48	3.71
12/31/2016	64,596,066	79,505,000	80,259,713	124.25	3.40
12/31/2017	65,727,912	89,604,000	89,858,224	136.71	3.07
12/31/2018	64,988,583	87,281,000	87,167,339	134.13	3.12
12/31/2019	74,279,999	87,319,000	87,446,476	117.73	3.56
12/31/2020	77,392,414	88,127,000	107,852,181	139.36	3.68
12/31/2021	76,841,344	88,754,000	88,803,958	115.57	3.63
12/31/2022	76,680,499	87,915,000	118,458,646	154.48	3.65

[1] In 2012, 2013, 2014, 2020 and 2022 the Fund received special contributions of $30.0 million, $30.0 million $12.0 million, $20.0 million, and $30.0 million respectively, from the District in addition to the employer contribution based upon the District's Funding Policy.

HISTORY OF EMPLOYEE ANNUITANTS AND SURVIVOR ANNUITANTS ADDED TO AND REMOVED FROM BENEFIT PAYROLL

Employee Annuitants

	Added		Removed		Annual Payroll		Average	Increase
Year	Number	Annual Benefits[1]	Number	Annual Benefits	Number	Annual Benefits	Annuity Benefits	to Avg Benefits
2013	75	6,497,171	52	2,345,333	1,704	108,173,524	63,482	2.6%
2014	80	7,583,277	55	2,677,032	1,729	113,079,769	65,402	3.0%
2015	101	9,640,885	70	3,828,434	1,760	118,892,219	67,552	3.3%
2016	87	8,688,540	68	4,089,312	1,779	123,491,448	69,416	2.8%
2017	98	14,254,728	68	3,780,260	1,809	129,366,688	71,513	3.0%
2018	99	6,049,960	60	3,769,202	1,848	135,435,622	73,288	2.5%
2019	94	10,830,012	59	3,941,499	1,883	142,324,135	75,584	3.1%
2020	104	11,484,248	70	4,271,335	1,917	149,537,047	78,006	3.2%
2021	92	11,244,741	91	6,383,515	1,918	154,398,273	80,500	3.2%
2022	80	9,903,727	83	5,710,596	1,915	158,591,403	82,815	2.9%

Survivor Annuitants

	Added		Removed		Annual Payroll		Average	Increase
Year	Number	Annual Benefits[1]	Number	Annual Benefits	Number	Annual Benefits	Annuity Benefits	to Avg Benefits
2013	29	1,718,098	43	1,021,552	605	19,768,391	32,675	6.1%
2014	28	1,846,441	40	931,782	593	20,683,050	34,879	6.7%
2015	34	2,313,674	47	1,160,738	580	21,835,988	37,648	7.9%
2016	42	3,096,415	32	1,162,089	590	23,770,312	40,289	7.0%
2017	25	1,991,463	39	1,146,717	576	24,615,058	42,734	6.1%
2018	30	1,798,261	35	1,046,607	571	25,965,116	45,473	6.4%
2019	28	2,408,555	38	1,246,555	561	27,127,117	48,355	6.3%
2020	34	2,659,591	49	2,064,444	546	27,722,263	50,773	5.0%
2021	44	3,536,201	47	1,573,739	543	29,684,725	54,668	7.7%
2022	37	3,396,312	33	1,803,277	547	31,277,760	57,181	4.6%

1 Includes 3% annual statutory increase for qualified employee and surviving spouse annuitants.

2 Annual payroll is an annualized amount and represents twelve times the December 1st paid annuities.

Source: Foster & Foster

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