



November 5, 2021

Board of Trustees
Teacher Retirement System of Texas
1000 Red River Street
Austin, TX 78701

**Subject: **GASB 67 Reporting and Disclosure Information for the year ending
August 31, 2021****

Dear Board of Trustees,

This report provides information required by the Teacher Retirement System of Texas (TRS) in connection with the Governmental Accounting Standards Board (GASB) Statement No. 67 “Financial Reporting for Pension Plans.” The information provided herein was prepared for the purpose of assisting TRS to comply with the financial reporting and disclosure requirements of GASB No. 67.

The calculation of the liability associated with the benefits described in this report was performed for the purpose of satisfying the requirements of GASB No. 67 and is not applicable for purposes of funding the plan. A calculation of the plan’s liability for other purposes may produce significantly different results. This report may be provided to parties other than TRS only in its entirety and only with the permission of TRS.

The total pension liability, net pension liability, and certain sensitivity information shown in this report are based on an actuarial valuation performed as of August 31, 2020. The total pension liability was rolled forward from the valuation date to the measurement date of August 31, 2021 using generally accepted actuarial principles. The liabilities reflect the actuarial assumptions adopted by the Board in July of 2018. It is our opinion that the assumptions are internally consistent, reasonable, and comply with the requirements under GASB No. 67. There were no significant events or changes in the benefit provisions that required an adjustment to the rolled forward liabilities.

This report is based upon information, furnished to us by TRS, which include benefit provisions, membership information, and financial data. We did not audit this data and information, but we did apply a number of tests and concluded that it was reasonable and consistent. GRS is not responsible for the accuracy or completeness of the information provided to us by TRS.

The final section of the report titled “Calculation of the Single Discount Rate” is not a required disclosure item for your financial statements. However, it is possible that your auditors will request this information which is why it is included in the report.

Certain tables included in the Required Supplementary Information should include a 10-year history of information. As provided for in GASB No. 67, this historical information is only presented for the years in which the information was measured in conformity with the requirements of GASB No. 67. The historical information in this report begins with the information presented for the fiscal year ending August 31, 2014.

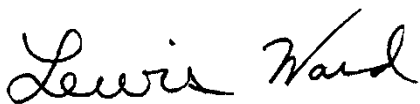
This report compliments the August 31, 2020 actuarial valuation report dated November 9, 2020 that was provided to TRS and should be considered together as a complete report for the plan year ending August 31, 2021. Please see the actuarial valuation report as of August 31, 2020 for additional discussion of the nature of actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions. Also, please see the experience study report dated July 27, 2018 which details the actuarial assumptions used in the determination of the net pension liability. The actuarial cost method used to determine the GASB No. 67 net pension liability is the Individual Entry Age Normal method as prescribed in GASB No. 67.

The projected cash flows from the employer are based on contributions for the most recent five year period, modified on consideration of subsequent events. Changes in statute in the 2013 legislative session and the subsequent follow through are indicators that the legislature is committed to an increase in funding levels for the pension funds. Additional changes to the contribution levels were adopted in the 2019 legislative session. Based on these events, projected employer contributions are based on the contribution rates adopted by the 2019 legislature.

The actuarial methods and assumptions have been selected by the Board of Trustees of the Teacher Retirement System of Texas based upon GRS analysis and recommendations. The Board of Trustees has sole authority to determine the actuarial assumptions used for the plan. The actuarial methods and assumptions are primarily based on a study of actual experience for the three year period ending August 31, 2017 and were adopted in July 2018. There is no change in assumptions this year.

To the best of our knowledge, the information contained with this report is accurate and fairly represents the actuarial position of the Teacher Retirement System of Texas. All calculations have been made in conformity with generally accepted actuarial principles and practices as well as with the Actuarial Standards of Practice issued by the Actuarial Standards Board. Mr. Newton is a member of the American Academy of Actuaries (MAAA) and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Respectfully submitted,
Gabriel, Roeder, Smith & Company



Lewis Ward
Consultant



Joe Newton, FSA, EA, MAAA
Pension Market Leader and Actuary

Summary of Population Statistics

Inactive Plan Members or Beneficiaries Currently Receiving Benefits	445,274
Inactive Plan Members Entitled to But Not Yet Receiving Benefits	322,682
Active Plan Members	<u>914,752</u>
Total Plan Members	1,682,708

All counts are as of the valuation date August 31, 2020

The Average Expected Remaining Service Life (AERSL) of 6.3082 is based on the membership information as of the beginning of the fiscal year. The AERSL of the active employees was 11.6041 years. This calculates to a total remaining service years of $11.6041 * 914,752 = 10,614,873.68$ years. Divided by the total membership of 1,682,708 as of August 31, 2020 yields an AERSL of 6.3082 years.



Measurement of the Net Pension Liability

The net pension liability is measured as the total pension liability, less the amount of the pension plan's fiduciary net position. In actuarial terms, this will be the accrued liability less the fair value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer's contribution requirement).

A single discount rate of 7.250% was used to measure the total pension liability. This single discount rate was based on the expected rate of return on pension plan investments of 7.25%. The projection of cash flows used to determine this single discount rate assumed that plan member contributions, the employer contributions, and the state contributions will be made at the rates set by the legislature during the 2019 legislative session (please see the actuarial valuation report for a description of these rates). It is assumed that future non-member contributions will be 8.50% of payroll in fiscal year 2020 gradually increasing to 9.55% of payroll over the next several fiscal years (these contributions include contributions by the State and the employers for active employees and rehired retirees).

Based on these assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all period of projected benefit payments to determine the total pension liability.

A brief summary of the primary assumptions used in the determination of the net pension liability is shown in the table on the following page.

Changes in Assumptions Since Prior Valuation

The actuarial assumptions and methods are the same as used in determining the prior year's Net Pension Liability.

Changes in Benefit Provisions Since Prior Valuation

The benefit provisions are the same as used in determining the prior year's Net Pension Liability.

Actuarial Assumptions - The total pension liability is determined by an actuarial valuation. The actuarial assumptions used to determine the total pension liability were based on the results of an experience study for the three-year period ending August 31, 2017. The post-retirement mortality rates for healthy lives were based on the 2018 TRS of Texas Healthy Pensioner Mortality Tables, with full generational projection using the ultimate improvement rates from the most recently published projection scale ("U-MP"). The active mortality rates were based on 90% of the RP-2014 Employee Mortality Tables for males and females, also with full generational mortality.

The following methods and assumptions were applied to this measurement period:

Valuation Date	August 31, 2020 (total pension liability rolled forward from valuation date to measurement date of August 31, 2021)
Actuarial Cost Method	Individual Entry Age Normal actuarial cost method
Asset Valuation Method	Fair Value
Actuarial Assumptions:	
Single Discount Rate	7.25%
Long-term Expected Return	7.25%
Municipal Bond Rate*	1.95%
Last year ending August 31 in projection period (100 years)	2120
Inflation	2.30%
Salary Increases	3.05% to 9.05% including inflation
Ad hoc post-employment benefit changes	None

* *The municipal bond rate used is 1.95% as of August 2021(i.e. the rate closest to but not later than the Measurement Date). The source for the rate is the Fixed Income Market Data/Yield Curve/Data Municipal bonds with 20 years to maturity that include only federally tax-exempt municipal bonds as reported in Fidelity Index's "20-Year Municipal GO AA Index."*

The actuarial assumptions used in the determination of the total pension liability are the same assumptions used in the actuarial valuation as of August 31, 2020. For a full description of these assumptions please see the actuarial valuation report dated November 9, 2020.



Below is a table providing the sensitivity of the net pension liability to changes in the discount rate. In particular, the table presents the plan's net pension liability, if it were calculated using a single discount rate that is 1-percentage-point lower or 1-percentage-point higher than the single discount rate:

Sensitivity of the Net Pension Liability to the Single Discount Rate Assumption

1% Decrease	Current Single Discount Rate Assumption	1% Increase
6.250%	7.250%	8.250%
\$55,648,259,551	\$25,466,461,134	\$979,861,293

Reconciliation of Fiduciary Net Position

for Year Ended August 31, 2021

	<u>Year Ending August 31, 2021</u>
Additions	
Contributions	
Non-Employer Contributing Entity	\$ 2,140,553,293
Employer	2,124,027,701
Employee	3,839,243,646
Other	103,723,578
Total Contributions	<u>\$ 8,207,548,218</u>
Investment Income	
Net Appreciation in Fair Value of Investments	\$ 40,756,410,833
Interest and Dividends	0
Less Investment Expense	(244,271,586)
Net Investment Income	<u>\$ 40,512,139,247</u>
Other	<u>\$ 3,130,786</u>
Total Additions	<u>\$ 48,722,818,251</u>
Deductions	
Benefit payments, including refunds of employee contributions	\$ 12,135,346,688
Pension Plan Administrative Expense	71,359,850
Other	125,354,460
Total Deductions	<u>\$ 12,332,060,998</u>
Net Increase (Decrease) in Net Position	<u>\$ 36,390,757,253</u>
Net Position Restricted for Pensions	
Beginning of Year	<u>\$ 165,416,245,243</u>
End of Year	<u>\$ 201,807,002,496</u>



Schedules of Required Supplementary Information

Schedule of Changes in the Employer's Net Pension Liability and Related Ratios

Fiscal year ending August 31,	2021	2020	2019	2018	2017
Total Pension Liability					
Service Cost	\$ 5,793,397,669	\$ 5,651,646,985	\$ 5,642,074,695	\$ 4,654,171,138	\$ 4,489,045,421
Interest on the Total Pension Liability	15,645,734,217	15,014,048,172	14,267,256,072	14,109,276,321	13,515,485,995
Benefit Changes	-	0	588,827,787	-	-
Difference between Expected and Actual Experience	(1,004,526,652)	(259,157,014)	(982,693,577)	-	(969,830,844)
Assumption Changes	-	0	(7,425,278,607)	22,106,679,263	700,880,288
Benefit Payments	(11,686,211,054)	(10,972,292,168)	(11,253,728,973)	(10,172,997,008)	(9,775,775,472)
Refunds	(449,135,634)	(421,366,179)	(486,460,902)	(422,335,740)	(420,421,056)
Net Change in Total Pension Liability	8,299,258,546	\$ 9,012,879,796	\$ 349,996,495	30,274,793,974	7,539,384,332
Total Pension Liability - Beginning	218,974,205,084	\$ 209,961,325,288	\$ 209,611,328,793	179,336,534,819	171,797,150,487
Total Pension Liability - Ending (a)	\$ 227,273,463,630	\$ 218,974,205,084	\$ 209,961,325,288	\$ 209,611,328,793	\$ 179,336,534,819
Plan Fiduciary Net Position					
Non-Contributing Entity	2,140,553,293	\$ 2,107,999,393	\$ 1,737,852,502	1,715,784,550	1,697,962,608
Employer Contributions	\$ 2,124,027,701	2,016,481,636	1,761,821,902	\$ 1,671,257,303	\$ 1,588,309,345
Employee Contributions	3,839,243,646	3,736,877,464	3,482,869,726	3,360,773,197	3,242,556,261
Pension Plan Net Investment Income	40,512,139,247	11,068,916,613	7,669,028,874	11,242,813,657	17,079,807,347
Benefit Payments	(11,686,211,054)	(10,972,292,168)	(11,253,728,973)	(10,172,997,008)	(9,775,775,472)
Refunds	(449,135,634)	(421,366,179)	(486,460,902)	(422,335,740)	(420,421,056)
Pension Plan Administrative Expense	(71,359,850)	(67,135,880)	(60,485,645)	(64,926,169)	(44,189,998)
Other	(18,500,096)	(31,434,711)	558,399,758	(123,390,077)	(14,964,388)
Net Change in Plan Fiduciary Net Position	36,390,757,253	\$ 7,438,046,168	\$ 3,409,297,242	7,206,979,713	13,353,284,647
Plan Fiduciary Net Position - Beginning	165,416,245,243	\$ 157,978,199,075	\$ 154,568,901,833	147,361,922,120	134,008,637,473
Plan Fiduciary Net Position - Ending (b)	\$ 201,807,002,496	\$ 165,416,245,243	\$ 157,978,199,075	\$ 154,568,901,833	\$ 147,361,922,120
Net Pension Liability - Ending (a) - (b)	25,466,461,134	\$ 53,557,959,841	\$ 51,983,126,213	55,042,426,960	31,974,612,699
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	88.79 %	75.54 %	75.24 %	73.74 %	82.17 %
Covered Employee Payroll	\$ 49,860,307,091	\$ 48,530,876,156	\$ 45,232,074,364	\$ 43,646,405,156	\$ 42,111,120,273
Net Pension Liability as a Percentage of Covered Employee Payroll	51.08 %	110.36 %	114.93 %	126.11 %	75.93 %

Notes to Schedule:

2018 - Changes of assumptions: The discount rate changed from 8.0% as of August 31, 2017 to a blended rate of 6.907% as of August 31, 2018. The long-term assumed rate of return changed from 8.0% as of August 31, 2017 to 7.25% as of August 31, 2018. Demographic and economic assumptions were updated based on the experience study performed for TRS for the period ending August 31, 2017. The total pension liability as of August 31, 2018 was developed using a roll-forward method from the August 31, 2017 valuation.

2020 - Change of assumptions: The state and employer contribution rate changed from 6.8% to 7.5%. The 1.5% public education employer contribution applied to just employers whose employees were not covered by OASDI in 2019 and it changed in 2020 to apply to all public schools, charter schools and regional education centers irrespective of participation in OASDI.

2021 - Changes of assumptions: The public education employer contribution rate changed from 1.5% in 2020 to 1.6% in 2021.



Schedules of Required Supplementary Information

Schedule of Changes in the Employer's Net Pension Liability and Related Ratios

Fiscal year ending August 31,	2016	2015	2014
Total Pension Liability			
Service Cost	\$ 4,392,076,679	\$ 4,225,448,833	\$ 3,965,994,265
Interest on the Total Pension Liability	12,896,571,424	12,555,645,919	11,813,445,940
Benefit Changes	-	-	-
Difference between Expected and Actual Experience	373,668,629	(1,588,618,832)	482,638,639
Assumption Changes	-	(1,474,723,994)	2,028,541,342
Benefit Payments	(9,379,122,730)	(8,935,111,459)	(8,548,642,525)
Refunds	(373,418,687)	(391,341,181)	(410,600,319)
Net Change in Total Pension Liability	7,909,775,315	4,391,299,286	9,331,377,342
Total Pension Liability - Beginning	163,887,375,172	159,496,075,886	150,164,698,544
Total Pension Liability - Ending (a)	\$ 171,797,150,487	\$ 163,887,375,172	\$ 159,496,075,886
Plan Fiduciary Net Position			
Non-Contributing Entity	1,675,631,248	1,591,482,988	1,530,623,829
Employer Contributions	\$ 1,483,389,348	\$ 1,377,972,653	\$ 984,552,391
Employee Contributions	2,943,669,320	2,576,024,311	2,357,686,000
Pension Plan Net Investment Income	9,193,280,560	(412,759,100)	19,434,430,034
Benefit Payments	(9,379,122,730)	(8,935,111,459)	(8,548,642,525)
Refunds	(373,418,687)	(391,341,181)	(410,600,319)
Pension Plan Administrative Expense	(44,402,710)	(35,556,979)	(41,904,190)
Other	(29,095,088)	(11,248,106)	84,954,006
Net Change in Plan Fiduciary Net Position	5,469,931,261	(4,240,536,873)	15,391,099,226
Plan Fiduciary Net Position - Beginning	128,538,706,212	132,779,243,085	117,388,143,859
Plan Fiduciary Net Position - Ending (b)	\$ 134,008,637,473	\$ 128,538,706,212	\$ 132,779,243,085
Net Pension Liability - Ending (a) - (b)	37,788,513,014	35,348,668,960	26,716,832,801
Plan Fiduciary Net Position as a Percentage	78.00 %	78.43 %	83.25 %
Covered Employee Payroll	\$ 40,742,826,333	\$ 38,448,124,045	\$ 36,654,290,800
Net Pension Liability as a Percentage	92.75 %	91.94 %	72.89 %

Notes to Schedule:

See prior page



Schedules of Required Supplementary Information

Schedule of the Net Pension Liability (Historical)

Last 10 Fiscal Years

<u>FY Ending August 31,</u>	<u>Total Pension Liability</u>	<u>Plan Net Position</u>	<u>Net Pension Liability</u>	<u>Plan Net Position as a % of Total Pension Liability</u>	<u>Covered Payroll</u>	<u>Net Pension Liability as a % of Covered Payroll</u>
2013	\$ 150,164,698,544	\$ 117,388,143,859	\$ 32,776,554,685	78.17%	\$ 35,188,983,344	93.14%
2014	159,496,075,886	132,779,243,085	26,716,832,801	83.25%	36,654,290,800	72.89%
2015	163,887,375,172	128,538,706,212	35,348,668,960	78.43%	38,448,124,045	91.94%
2016	171,797,150,487	134,008,637,473	37,788,513,014	78.00%	40,742,826,333	92.75%
2017	179,336,534,819	147,361,922,120	31,974,612,699	82.17%	42,111,120,273	75.93%
2018	209,611,328,793	154,568,901,833	55,042,426,960	73.74%	43,646,405,156	126.11%
2019	209,961,325,288	157,978,199,075	51,983,126,213	75.24%	45,232,074,364	114.93%
2020	218,974,205,084	165,416,245,243	53,557,959,841	75.54%	48,530,876,156	110.36%
2021	227,273,463,630	201,807,002,496	25,466,461,134	88.79%	49,860,307,091	51.08%



SCHEDULES OF REQUIRED SUPPLEMENTARY INFORMATION

Schedule of Contributions

FY Ending August 31,	Actuarially Determined Contribution	Actual Contribution	Contribution Deficiency (Excess)	Covered Payroll	Actual Contribution as a % of Covered Payroll
2014	\$3,177,927,012	\$2,515,176,220	662,750,792	36,654,290,800	6.86%
2015	3,171,970,234	2,969,455,641	202,514,593	38,448,124,045	7.72%
2016	3,226,831,846	3,159,020,596	67,811,250	40,742,826,333	7.75%
2017	3,343,622,950	3,286,271,953	57,350,997	42,111,120,273	7.80%
2018	3,426,242,805	3,387,041,853	39,200,952	43,646,405,156	7.76%
2019	4,288,000,650	3,499,674,404	788,326,246	45,232,074,364	7.74%
2020	4,527,930,745	4,124,481,029	403,449,716	48,530,876,156	8.50%
2021	4,522,329,853	4,264,580,994	257,748,859	49,860,307,091	8.55%



Notes to Schedule of Contributions

Valuation Date: August 31, 2020 (to determine contribution rate for fiscal year ending August 31, 2021).

Notes: Actuarially determined contribution rates are calculated as of August 31 preceding fiscal year. Members and employers contribute based on statutorily fixed rates.

Methods and Assumptions Used to Determine Contribution Rates:

Actuarial Cost Method	Individual Entry Age Normal actuarial cost method
Amortization Method	Level Percentage of Payroll, Floating
Remaining Amortization Period	27 years based on increased employer and member rates enacted during 2019 legislative session .
Asset Valuation Method	5 Year smoothed market
Inflation	2.30%
Salary Increases	3.05% to 9.05% including inflation
Investment Rate of Return	7.25%
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition. Last updated for the 2018 valuation pursuant to an experience study conducted for the period ending on August 31, 2017.
Mortality	The post-retirement mortality rates for healthy lives were based on the 2018 TRS of Texas Healthy Pensioner Mortality Tables, with full generational projection using the ultimate improvement rates from the most recently published projection scale ("U-MP"). The active mortality rates were based on 90% of the RP-2014 Employee Mortality Tables for males and females, also with full generational mortality.

Other Information:

Notes There were no benefit changes during the year.

Calculation of the Single Discount Rate

GASB Statement No. 67 includes a specific requirement for the discount rate that is used for the purpose of the measurement of the Total Pension Liability. This rate considers the ability of the fund to meet benefit obligations in the future. To make this determination, employer contributions, employee contributions, benefit payments, expenses and investment returns are projected into the future. The Plan Net Position (assets) in future years can then be determined and compared to its obligation to make benefit payments in those years. As long as assets are projected to be on hand in a future year, the assumed valuation discount rate is used. In years where assets are not projected to be sufficient to meet benefit payments, the use of a municipal bond rate is required, as described in the following paragraph.

The *single discount rate* (SDR) is equivalent to applying these two rates to the benefits that are projected to be paid during the different time periods. The SDR reflects (1) the long-term expected rate of return on pension plan investments (during the period in which the fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected rate of return on pension plan investments is 7.25%; the municipal bond rate is 1.950% (based on the daily rate closest to but not later than the measurement date of the Fidelity “20-Year Municipal GO AA Index”); and the resulting single discount rate is 7.250%.

The tables in this section provide background for the development of the single discount rate.

The **Projection of Contributions** table shows the development of expected contributions in future years. Normal Cost contributions for future hires are not included (nor are their liabilities).

The **Projection of Plan Fiduciary Net Position** table shows the development of expected asset levels in future years.

The **Present Values of Projected Benefit Payments** table shows the development of the Single Discount Rate (SDR). It breaks down the benefit payments into present values for funded and unfunded portions and shows the equivalent total at the SDR.

Single Discount Rate Development

Projection of Contributions Beginning September 1, 2021

Year	Payroll for Current Employees	Payroll for Future Employees	Total Employee Payroll	Contributions from Current Employees	Employer Contributions for All Employees	Employer Normal Cost Contributions Related to Payroll of Future Employees	Total Contributions
1	44,485,084,100	\$ 6,871,032,204	51,356,116,304	3,558,806,728	4,560,423,128	(260,601,749)	7,858,628,107
2	42,886,256,273	10,010,543,520	52,896,799,793	3,430,900,502	4,866,505,581	(374,922,128)	7,922,483,955
3	41,432,799,321	13,050,904,466	54,483,703,787	3,418,205,944	5,181,400,230	(450,370,321)	8,149,235,853
4	40,038,555,645	16,079,659,255	56,118,214,900	3,303,180,841	5,370,513,166	(548,001,513)	8,125,692,494
5	38,706,605,351	19,095,155,996	57,801,761,347	3,193,294,941	5,531,628,561	(643,088,558)	8,081,834,944
6	37,408,779,049	22,127,035,139	59,535,814,188	3,086,224,272	5,697,577,418	(736,787,631)	8,047,014,059
7	36,117,443,354	25,204,445,259	61,321,888,613	2,979,689,077	5,868,504,740	(830,174,260)	8,018,019,557
8	34,814,066,323	28,347,478,949	63,161,545,272	2,872,160,472	6,044,559,882	(923,886,591)	7,992,833,763
9	33,493,956,425	31,562,435,205	65,056,391,630	2,763,251,405	6,225,896,679	(1,018,160,410)	7,970,987,674
10	32,174,394,739	34,833,688,640	67,008,083,379	2,654,387,566	6,412,673,579	(1,112,789,944)	7,954,271,201
11	30,824,549,594	38,193,776,286	69,018,325,880	2,543,025,342	6,605,053,787	(1,208,622,879)	7,939,456,250
12	29,446,838,756	41,642,036,900	71,088,875,656	2,429,364,197	6,803,205,400	(1,305,742,174)	7,926,827,423
13	28,041,488,021	45,180,053,905	73,221,541,926	2,313,422,762	7,007,301,562	(1,404,174,279)	7,916,550,045
14	26,618,430,344	48,799,757,839	75,418,188,184	2,196,020,503	7,217,520,609	(1,503,769,597)	7,909,771,515
15	25,190,045,666	52,490,688,163	77,680,733,829	2,078,178,767	7,434,046,227	(1,604,347,228)	7,907,877,766
16	23,789,606,882	56,221,548,962	80,011,155,844	1,962,642,568	7,657,067,614	(1,705,080,320)	7,914,629,862
17	22,444,909,992	59,966,580,528	82,411,490,520	1,851,705,074	7,886,779,643	(1,805,334,094)	7,933,150,623
18	21,154,770,750	63,729,064,486	84,883,835,235	1,745,268,587	8,123,383,032	(1,905,249,897)	7,963,401,722
19	19,919,368,997	67,510,981,295	87,430,350,292	1,643,347,942	8,367,084,523	(2,005,140,152)	8,005,292,313
20	18,724,173,205	71,329,087,596	90,053,260,801	1,544,744,289	8,618,097,059	(2,105,569,095)	8,057,272,253
21	17,556,690,304	75,198,168,321	92,754,858,625	1,448,426,950	8,876,639,970	(2,207,201,391)	8,117,865,529
22	16,405,338,051	79,132,166,332	95,537,504,384	1,353,440,389	9,142,939,170	(2,310,672,297)	8,185,707,262
23	15,268,030,511	83,135,599,004	98,403,629,515	1,259,612,517	9,417,227,345	(2,416,380,352)	8,260,459,510
24	14,130,230,943	87,225,507,458	101,355,738,401	1,165,744,053	9,699,744,165	(2,525,260,858)	8,340,227,360
25	13,005,849,182	91,390,561,371	104,396,410,553	1,072,982,557	9,990,736,490	(2,637,082,089)	8,426,636,958
26	11,903,631,606	95,624,671,263	107,528,302,869	982,049,608	10,290,458,585	(2,751,625,570)	8,520,882,623
27	10,832,199,724	99,921,952,231	110,754,151,955	893,656,477	10,599,172,342	(2,868,644,916)	8,624,183,903
28	9,791,047,240	104,285,729,274	114,076,776,514	807,761,397	10,917,147,512	(2,988,533,185)	8,736,375,724
29	8,764,711,607	108,734,368,202	117,499,079,809	723,088,708	11,244,661,938	(3,112,401,088)	8,855,349,558
30	7,762,344,617	113,261,707,587	121,024,052,204	640,393,431	11,582,001,796	(3,239,923,413)	8,982,471,814
31	6,795,336,167	117,859,437,603	124,654,773,770	560,615,234	11,929,461,850	(3,370,605,926)	9,119,471,158
32	5,864,711,881	122,529,705,102	128,394,416,983	483,838,730	12,287,345,705	(3,504,498,704)	9,266,685,731
33	4,983,507,407	127,262,742,086	132,246,249,492	411,139,361	12,655,966,076	(3,640,947,985)	9,426,157,452
34	4,165,575,849	132,048,061,128	136,213,636,977	343,660,008	13,035,645,059	(3,779,349,722)	9,599,955,345
35	3,413,112,019	136,886,934,067	140,300,046,087	281,581,742	13,426,714,410	(3,919,757,834)	9,788,538,318
36	2,734,620,548	141,774,426,921	144,509,047,469	225,606,195	13,829,515,843	(4,061,916,811)	9,993,205,227
37	2,140,836,990	146,703,481,903	148,844,318,893	176,619,052	14,244,401,318	(4,205,520,328)	10,215,500,042
38	1,638,742,315	151,670,906,145	153,309,648,460	135,196,241	14,671,733,358	(4,350,612,989)	10,456,316,610
39	1,238,756,787	156,670,181,127	157,908,937,914	102,197,435	15,111,885,358	(4,496,819,593)	10,717,263,200
40	927,845,367	161,718,360,684	162,646,206,051	76,547,243	15,565,241,919	(4,644,516,654)	10,997,272,508
41	684,057,098	166,841,535,134	167,525,592,233	56,434,711	16,032,199,177	(4,794,354,808)	11,294,279,080
42	497,348,019	172,054,011,980	172,551,360,000	41,031,212	16,513,165,152	(4,946,648,139)	11,607,548,225
43	356,134,442	177,371,766,358	177,727,900,800	29,381,091	17,008,560,107	(5,101,789,711)	11,936,151,487
44	248,962,325	182,810,775,499	183,059,737,824	20,539,392	17,518,816,910	(5,260,212,981)	12,279,143,321
45	168,970,281	188,382,559,677	188,551,529,958	13,940,048	18,044,381,417	(5,422,214,680)	12,636,106,785
46	110,578,486	194,097,497,371	194,208,075,857	9,122,725	18,585,712,860	(5,588,074,173)	13,006,761,412
47	68,386,389	199,965,931,744	200,034,318,133	5,641,877	19,143,284,245	(5,758,109,494)	13,390,816,628
48	38,822,561	205,996,525,116	206,035,347,677	3,202,861	19,717,582,773	(5,932,567,778)	13,788,217,856
49	19,377,368	212,197,030,739	212,216,408,107	1,598,633	20,309,110,256	(6,111,677,173)	14,199,031,716



Single Discount Rate Development

Projection of Contributions Beginning September 1, 2021(continued)

Year	Payroll for Current Employees	Payroll for Future Employees	Total Employee Payroll	Contributions from Current Employees	Employer Contributions for		Total Contributions
					All Employees	Employer Normal Cost Contributions Related to Payroll of Future Employees	
50	7,996,344	218,574,904,006	218,582,900,350	659,698	20,918,383,564	(6,295,665,036)	14,623,378,226
51	3,107,805	225,137,279,556	225,140,387,361	256,394	21,545,935,070	(6,484,724,827)	15,061,466,637
52	1,352,214	231,893,246,767	231,894,598,982	111,558	22,192,313,123	(6,679,116,634)	15,513,308,047
53	510,714	238,850,926,237	238,851,436,951	42,134	22,858,082,516	(6,879,072,105)	15,979,052,545
54	123,895	246,016,856,165	246,016,980,060	10,221	23,543,824,992	(7,084,783,803)	16,459,051,410
55	15,088	253,397,474,374	253,397,489,462	1,245	24,250,139,741	(7,296,446,328)	16,953,694,658
56	648	260,999,413,497	260,999,414,145	53	24,977,643,934	(7,514,272,159)	17,463,371,828
57	-	268,829,396,570	268,829,396,570	-	25,726,973,252	(7,738,484,666)	17,988,488,586
58	-	276,894,278,467	276,894,278,467	-	26,498,782,449	(7,969,316,803)	18,529,465,646
59	-	285,201,106,821	285,201,106,821	-	27,293,745,923	(8,207,012,456)	19,086,733,467
60	-	293,757,140,025	293,757,140,025	-	28,112,558,300	(8,451,824,024)	19,660,734,276
61	-	302,569,854,226	302,569,854,226	-	28,955,935,049	(8,704,009,567)	20,251,925,482
62	-	311,646,949,853	311,646,949,853	-	29,824,613,101	(8,963,830,475)	20,860,782,626
63	-	320,996,358,349	320,996,358,349	-	30,719,351,494	(9,231,549,459)	21,487,802,035
64	-	330,626,249,099	330,626,249,099	-	31,640,932,039	(9,507,430,269)	22,133,501,770
65	-	340,545,036,572	340,545,036,572	-	32,590,160,000	(9,791,740,245)	22,798,419,755
66	-	350,761,387,669	350,761,387,669	-	33,567,864,800	(10,084,750,757)	23,483,114,043
67	-	361,284,229,299	361,284,229,299	-	34,574,900,744	(10,386,735,725)	24,188,165,019
68	-	372,122,756,178	372,122,756,178	-	35,612,147,766	(10,697,969,408)	24,914,178,358
69	-	383,286,438,864	383,286,438,864	-	36,680,512,199	(11,018,726,268)	25,661,785,931
70	-	394,785,032,030	394,785,032,030	-	37,780,927,565	(11,349,282,816)	26,431,644,749
71	-	406,628,582,990	406,628,582,990	-	38,914,355,392	(11,689,917,877)	27,224,437,515
72	-	418,827,440,480	418,827,440,480	-	40,081,786,054	(12,040,914,207)	28,040,871,847
73	-	431,392,263,695	431,392,263,695	-	41,284,239,636	(12,402,561,378)	28,881,678,258
74	-	444,334,031,605	444,334,031,605	-	42,522,766,825	(12,775,156,510)	29,747,610,315
75	-	457,664,052,554	457,664,052,554	-	43,798,449,829	(13,159,004,746)	30,639,445,083
76	-	471,393,974,130	471,393,974,130	-	45,112,403,324	(13,554,420,473)	31,557,982,851
77	-	485,535,793,354	485,535,793,354	-	46,465,775,424	(13,961,727,523)	32,504,047,901
78	-	500,101,867,155	500,101,867,155	-	47,859,748,687	(14,381,259,817)	33,478,488,870
79	-	515,104,923,169	515,104,923,169	-	49,295,541,147	(14,813,363,246)	34,482,177,901
80	-	530,558,070,864	530,558,070,864	-	50,774,407,382	(15,258,396,035)	35,516,011,347
81	-	546,474,812,990	546,474,812,990	-	52,297,639,603	(15,716,729,793)	36,580,909,810
82	-	562,869,057,380	562,869,057,380	-	53,866,568,791	(16,188,750,833)	37,677,817,958
83	-	579,755,129,101	579,755,129,101	-	55,482,565,855	(16,674,860,573)	38,807,705,282
84	-	597,147,782,974	597,147,782,974	-	57,147,042,831	(17,175,475,774)	39,971,567,057
85	-	615,062,216,464	615,062,216,464	-	58,861,454,116	(17,691,028,843)	41,170,425,273
86	-	633,514,082,958	633,514,082,958	-	60,627,297,739	(18,221,967,716)	42,405,330,023
87	-	652,519,505,446	652,519,505,446	-	62,446,116,671	(18,768,755,755)	43,677,360,916
88	-	672,095,090,610	672,095,090,610	-	64,319,500,171	(19,331,871,922)	44,987,628,249
89	-	692,257,943,328	692,257,943,328	-	66,249,085,176	(19,911,810,821)	46,337,274,355
90	-	713,025,681,628	713,025,681,628	-	68,236,557,732	(20,509,083,036)	47,727,474,696
91	-	734,416,452,077	734,416,452,077	-	70,283,654,464	(21,124,215,603)	49,159,438,861
92	-	756,448,945,639	756,448,945,639	-	72,392,164,098	(21,757,752,225)	50,634,411,873
93	-	779,142,414,008	779,142,414,008	-	74,563,929,021	(22,410,253,605)	52,153,675,416
94	-	802,516,686,428	802,516,686,428	-	76,800,846,891	(23,082,297,803)	53,718,549,088
95	-	826,592,187,021	826,592,187,021	-	79,104,872,298	(23,774,480,520)	55,330,391,778
96	-	851,389,952,632	851,389,952,632	-	81,478,018,467	(24,487,415,337)	56,990,603,130
97	-	876,931,651,211	876,931,651,211	-	83,922,359,021	(25,221,734,009)	58,700,625,012
98	-	903,239,600,747	903,239,600,747	-	86,440,029,792	(25,978,086,764)	60,461,943,028
99	-	930,336,788,770	930,336,788,770	-	89,033,230,685	(26,757,429,367)	62,275,801,318



Single Discount Rate Development

PROJECTION OF PLAN FIDUCIARY NET POSITION BEGINNING SEPTEMBER 1, 2021

Year	Projected Beginning	Projected Total	Projected Benefit	Projected	Projected Investment	Projected Ending Plan
	Plan Net Position	Contributions	Payments	Administrative Expenses	Earnings at 7.25%	Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
1	201,807,002,496	7,858,628,107	12,348,208,650	48,933,593	14,469,365,056	211,737,853,417
2	211,737,853,417	7,922,483,955	12,927,635,941	47,174,882	15,171,051,917	221,856,578,466
3	221,856,578,466	8,149,235,853	13,514,933,834	45,576,079	15,891,875,307	232,337,179,713
4	232,337,179,713	8,125,692,494	14,131,941,676	44,042,411	16,628,959,803	242,915,847,922
5	242,915,847,922	8,081,834,944	14,781,081,259	42,577,266	17,371,283,811	253,545,308,154
6	253,545,308,154	8,047,014,059	15,452,171,762	41,149,657	18,116,828,954	264,215,829,747
7	264,215,829,747	8,018,019,557	16,150,750,102	39,729,188	18,864,579,302	274,907,949,316
8	274,907,949,316	7,992,833,763	16,869,566,876	38,295,473	19,613,310,817	285,606,231,547
9	285,606,231,547	7,970,987,674	17,610,753,580	36,843,352	20,361,812,005	296,291,434,294
10	296,291,434,294	7,954,271,201	18,351,193,419	35,391,834	21,109,574,205	306,968,694,447
11	306,968,694,447	7,939,456,250	19,101,330,564	33,907,005	21,856,484,100	317,629,397,227
12	317,629,397,227	7,926,827,423	19,850,777,078	32,391,523	22,602,297,135	328,275,353,185
13	328,275,353,185	7,916,550,045	20,599,874,700	30,845,637	23,347,138,283	338,908,321,176
14	338,908,321,176	7,909,771,515	21,340,684,503	29,280,273	24,091,458,288	349,539,586,203
15	349,539,586,203	7,907,877,766	22,067,799,662	27,709,050	24,836,316,757	360,188,272,014
16	360,188,272,014	7,914,629,862	22,756,279,531	26,168,568	25,584,121,092	370,904,574,869
17	370,904,574,869	7,933,150,623	23,390,090,706	24,689,401	26,339,191,696	381,762,137,080
18	381,762,137,080	7,963,401,722	23,973,975,332	23,270,248	27,106,697,422	392,834,990,644
19	392,834,990,644	8,005,292,313	24,503,590,123	21,911,306	27,892,157,038	404,206,938,566
20	404,206,938,566	8,057,272,253	24,988,033,009	20,596,591	28,701,267,590	415,956,848,810
21	415,956,848,810	8,117,865,529	25,441,969,876	19,312,359	29,539,172,592	428,152,604,696
22	428,152,604,696	8,185,707,262	25,873,698,580	18,045,872	30,410,449,890	440,857,017,396
23	440,857,017,396	8,260,459,510	26,286,554,375	16,794,834	31,319,522,553	454,133,650,250
24	454,133,650,250	8,340,227,360	26,700,607,879	15,543,254	32,270,217,173	468,027,943,650
25	468,027,943,650	8,426,636,958	27,097,829,798	14,306,434	33,266,527,678	482,608,972,055
26	482,608,972,055	8,520,882,623	27,464,203,523	13,093,995	34,314,003,372	497,966,560,532
27	497,966,560,532	8,624,183,903	27,789,124,601	11,915,420	35,419,577,355	514,209,281,770
28	514,209,281,770	8,736,375,724	28,084,660,810	10,770,152	36,590,685,485	531,440,912,018
29	531,440,912,018	8,855,349,558	28,378,055,053	9,641,183	37,833,806,772	549,742,372,112
30	549,742,372,112	8,982,471,814	28,442,464,273	8,538,579	39,162,935,471	569,436,776,545
31	569,436,776,545	9,119,471,158	28,667,697,810	7,474,870	40,587,675,150	590,468,750,173
32	590,468,750,173	9,266,685,731	28,845,808,660	6,451,183	42,111,429,303	612,994,605,365
33	612,994,605,365	9,426,157,452	28,953,766,867	5,481,858	43,746,423,020	637,207,937,112
34	637,207,937,112	9,599,955,345	28,971,966,469	4,582,133	45,507,463,368	663,338,807,223
35	663,338,807,223	9,788,538,318	28,897,847,413	3,754,423	47,411,337,262	691,637,080,966
36	691,637,080,966	9,993,205,227	28,719,523,912	3,008,083	49,476,629,184	722,384,383,383
37	722,384,383,383	10,215,500,042	28,422,325,387	2,354,921	51,724,334,022	755,899,537,139
38	755,899,537,139	10,456,316,610	27,996,238,539	1,802,617	54,177,954,611	792,535,767,205
39	792,535,767,205	10,717,263,200	27,427,842,172	1,362,632	56,863,634,640	832,687,460,240
40	832,687,460,240	10,997,272,508	26,743,129,750	1,020,630	59,809,003,862	876,749,586,230
41	876,749,586,230	11,294,279,080	25,975,842,401	752,463	63,041,423,183	925,108,693,630
42	925,108,693,630	11,607,548,225	25,138,071,428	547,083	66,588,460,952	978,166,084,295
43	978,166,084,295	11,936,151,487	24,242,239,651	391,748	70,478,736,490	1,036,338,340,874
44	1,036,338,340,874	12,279,143,321	23,301,654,641	273,859	74,741,944,854	1,100,057,500,550
45	1,100,057,500,550	12,636,106,785	22,325,061,748	185,867	79,409,082,686	1,169,777,442,406
46	1,169,777,442,406	13,006,761,412	21,319,893,378	121,636	84,512,781,739	1,245,976,970,543
47	1,245,976,970,543	13,390,816,628	20,293,737,677	75,225	90,087,474,914	1,329,161,449,183
48	1,329,161,449,183	13,788,217,856	19,252,714,198	42,705	96,169,581,361	1,419,866,491,498
49	1,419,866,491,498	14,199,031,716	18,202,312,939	21,315	102,797,739,976	1,518,660,928,936
50	1,518,660,928,936	14,623,378,226	17,147,917,942	8,796	110,013,003,637	1,626,149,384,061



Single Discount Rate Development

Projection of Plan Fiduciary Net Position Beginning September 1, 2021 (continued)

Year	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected		Projected Ending Plan Net Position
				Administrative Expenses	Projected Investment Earnings at 7.25%	
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
51	1,626,149,384,061	15,061,466,637	16,094,620,987	3,419	117,859,033,646	1,742,975,259,939
52	1,742,975,259,939	15,513,308,047	15,049,499,218	1,487	126,382,225,196	1,869,821,292,475
53	1,869,821,292,475	15,979,052,545	14,018,255,668	562	135,631,878,953	2,007,413,967,743
54	2,007,413,967,743	16,459,051,410	13,004,415,005	136	145,660,552,154	2,156,529,156,166
55	2,156,529,156,166	16,953,694,658	12,011,084,218	17	156,524,398,643	2,317,996,165,232
56	2,317,996,165,232	17,463,371,828	11,041,478,565	1	168,283,442,581	2,492,701,501,076
57	2,492,701,501,076	17,988,488,586	10,098,791,917	-	181,001,856,362	2,681,593,054,107
58	2,681,593,054,107	18,529,465,646	9,186,164,716	-	194,748,265,176	2,885,684,620,213
59	2,885,684,620,213	19,086,733,467	8,306,752,107	-	209,596,072,182	3,106,060,673,755
60	3,106,060,673,755	19,660,734,276	7,463,695,750	-	225,623,805,630	3,343,881,517,911
61	3,343,881,517,911	20,251,925,482	6,660,050,300	-	242,915,494,997	3,600,388,888,090
62	3,600,388,888,090	20,860,782,626	5,898,762,502	-	261,561,078,087	3,876,911,986,302
63	3,876,911,986,302	21,487,802,035	5,182,505,742	-	281,656,844,508	4,174,874,127,103
64	4,174,874,127,103	22,133,501,770	4,513,539,281	-	303,305,922,550	4,495,800,012,142
65	4,495,800,012,142	22,798,419,755	3,893,605,201	-	326,618,810,197	4,841,323,636,893
66	4,841,323,636,893	23,483,114,043	3,323,906,903	-	351,713,949,135	5,213,196,793,168
67	5,213,196,793,168	24,188,165,019	2,805,138,046	-	378,718,340,237	5,613,298,160,378
68	5,613,298,160,378	24,914,178,358	2,337,441,782	-	407,768,204,233	6,043,643,101,187
69	6,043,643,101,187	25,661,785,931	1,920,480,939	-	439,009,689,430	6,506,394,095,609
70	6,506,394,095,609	26,431,644,749	1,553,507,519	-	472,599,625,668	7,003,871,858,507
71	7,003,871,858,507	27,224,437,515	1,235,268,028	-	508,706,333,735	7,538,567,361,729
72	7,538,567,361,729	28,040,871,847	963,956,832	-	547,510,498,601	8,113,154,775,346
73	8,113,154,775,346	28,881,678,258	737,151,999	-	589,206,109,873	8,730,505,411,478
74	8,730,505,411,478	29,747,610,315	551,694,194	-	634,001,477,040	9,393,702,804,639
75	9,393,702,804,639	30,639,445,083	403,723,876	-	682,120,321,492	10,106,058,847,338
76	10,106,058,847,338	31,557,982,851	288,839,411	-	733,802,940,704	10,871,130,931,482
77	10,871,130,931,482	32,504,047,901	202,218,877	-	789,307,446,686	11,692,740,207,191
78	11,692,740,207,191	33,478,488,870	138,823,980	-	848,911,082,487	12,574,990,954,568
79	12,574,990,954,568	34,482,177,901	93,686,956	-	912,911,616,407	13,522,291,061,919
80	13,522,291,061,919	35,516,011,347	62,250,005	-	981,628,814,604	14,539,373,637,865
81	14,539,373,637,865	36,580,909,810	40,735,881	-	1,055,405,994,769	15,631,319,806,563
82	15,631,319,806,563	37,677,817,958	26,248,682	-	1,134,611,675,188	16,803,583,051,026
83	16,803,583,051,026	38,807,705,282	16,649,743	-	1,219,641,344,079	18,062,015,450,645
84	18,062,015,450,645	39,971,567,057	10,391,456	-	1,310,919,367,766	19,412,895,994,011
85	19,412,895,994,011	41,170,425,273	6,377,642	-	1,408,901,048,360	20,862,961,090,003
86	20,862,961,090,003	42,405,330,023	3,846,931	-	1,514,074,840,022	22,419,437,413,117
87	22,419,437,413,117	43,677,360,916	2,279,123	-	1,626,964,733,632	24,090,077,228,542
88	24,090,077,228,542	44,987,628,249	1,325,756	-	1,748,132,820,371	25,883,196,351,406
89	25,883,196,351,406	46,337,274,355	756,783	-	1,878,182,045,713	27,807,714,914,691
90	27,807,714,914,691	47,727,474,696	423,533	-	2,017,759,166,460	29,873,201,132,314
91	29,873,201,132,314	49,159,438,861	232,278	-	2,167,557,924,540	32,089,918,263,438
92	32,089,918,263,438	50,634,411,873	124,835	-	2,328,322,452,656	34,468,875,003,132
93	34,468,875,003,132	52,153,675,416	65,576	-	2,500,850,928,119	37,021,879,541,091
94	37,021,879,541,091	53,718,549,088	33,452	-	2,685,999,492,428	39,761,597,549,156
95	39,761,597,549,156	55,330,391,778	16,420	-	2,884,686,455,620	42,701,614,380,133
96	42,701,614,380,133	56,990,603,130	7,716	-	3,097,896,805,863	45,856,501,781,411
97	45,856,501,781,411	58,700,625,012	3,606	-	3,326,687,046,329	49,241,889,449,146
98	49,241,889,449,146	60,461,943,028	1,724	-	3,572,190,382,985	52,874,541,773,434
99	52,874,541,773,434	62,275,801,318	895	-	3,835,622,278,465	56,772,439,852,322



Single Discount Rate Development

Present Values of Projected Benefits Beginning September 1, 2021

Year	Projected Beginning Plan Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of Benefit Payments using Single Discount Rate (sdr)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v ^a ((a)-.5)	(g)=(e)*vf ^a ((a)-.5)	(h)=(c)/((1+sdr) ^a ((a)-.5))
1	\$ 201,807,002,496	\$ 12,348,208,650	\$ 12,348,208,650	\$ -	\$ 11,117,522,266	\$ -	\$ 11,117,522,266
2	211,737,853,417	12,927,635,941	12,927,635,941	-	10,852,401,711	-	10,852,401,711
3	221,856,578,466	13,514,933,834	13,514,933,834	-	10,578,482,473	-	10,578,482,473
4	232,337,179,713	14,131,941,676	14,131,941,676	-	10,313,687,837	-	10,313,687,837
5	242,915,847,922	14,781,081,259	14,781,081,259	-	10,058,218,130	-	10,058,218,130
6	253,545,308,154	15,452,171,762	15,452,171,762	-	9,804,085,080	-	9,804,085,080
7	264,215,829,747	16,150,750,102	16,150,750,102	-	9,554,609,478	-	9,554,609,478
8	274,907,949,316	16,869,566,876	16,869,566,876	-	9,305,224,918	-	9,305,224,918
9	285,606,231,547	17,610,753,580	17,610,753,580	-	9,057,400,714	-	9,057,400,714
10	296,291,434,294	18,351,193,419	18,351,193,419	-	8,800,202,255	-	8,800,202,255
11	306,968,694,447	19,101,330,564	19,101,330,564	-	8,540,723,470	-	8,540,723,470
12	317,629,397,227	19,850,777,078	19,850,777,078	-	8,275,824,106	-	8,275,824,106
13	328,275,353,185	20,599,874,700	20,599,874,700	-	8,007,575,040	-	8,007,575,040
14	338,908,321,176	21,340,684,503	21,340,684,503	-	7,734,771,403	-	7,734,771,403
15	349,539,586,203	22,067,799,662	22,067,799,662	-	7,457,630,631	-	7,457,630,631
16	360,188,272,014	22,756,279,531	22,756,279,531	-	7,170,439,829	-	7,170,439,829
17	370,904,574,869	23,390,090,706	23,390,090,706	-	6,871,936,552	-	6,871,936,552
18	381,762,137,080	23,973,975,332	23,973,975,332	-	6,567,347,370	-	6,567,347,370
19	392,834,990,644	24,503,590,123	24,503,590,123	-	6,258,674,315	-	6,258,674,315
20	404,206,938,566	24,988,033,009	24,988,033,009	-	5,950,965,101	-	5,950,965,101
21	415,956,848,810	25,441,969,876	25,441,969,876	-	5,649,483,774	-	5,649,483,774
22	428,152,604,696	25,873,698,580	25,873,698,580	-	5,356,970,381	-	5,356,970,381
23	440,857,017,396	26,286,554,375	26,286,554,375	-	5,074,544,820	-	5,074,544,820
24	454,133,650,250	26,700,607,879	26,700,607,879	-	4,806,038,858	-	4,806,038,858
25	468,027,943,650	27,097,829,798	27,097,829,798	-	4,547,820,749	-	4,547,820,749
26	482,608,972,055	27,464,203,523	27,464,203,523	-	4,297,724,143	-	4,297,724,143
27	497,966,560,532	27,789,124,601	27,789,124,601	-	4,054,610,050	-	4,054,610,050
28	514,209,281,770	28,084,660,810	28,084,660,810	-	3,820,727,891	-	3,820,727,891
29	531,440,912,018	28,378,055,053	28,378,055,053	-	3,599,666,378	-	3,599,666,378
30	549,742,372,112	28,442,464,273	28,442,464,273	-	3,363,950,101	-	3,363,950,101
31	569,436,776,545	28,667,697,810	28,667,697,810	-	3,161,388,294	-	3,161,388,294
32	590,468,750,173	28,845,808,660	28,845,808,660	-	2,965,995,178	-	2,965,995,178
33	612,994,605,365	28,953,766,867	28,953,766,867	-	2,775,846,806	-	2,775,846,806
34	637,207,937,112	28,971,966,469	28,971,966,469	-	2,589,829,028	-	2,589,829,028
35	663,338,807,223	28,897,847,413	28,897,847,413	-	2,408,581,316	-	2,408,581,316
36	691,637,080,966	28,719,523,912	28,719,523,912	-	2,231,905,256	-	2,231,905,256
37	722,384,383,383	28,422,325,387	28,422,325,387	-	2,059,495,394	-	2,059,495,394
38	755,899,537,139	27,996,238,539	27,996,238,539	-	1,891,488,052	-	1,891,488,052
39	792,535,767,205	27,427,842,172	27,427,842,172	-	1,727,819,050	-	1,727,819,050
40	832,687,460,240	26,743,129,750	26,743,129,750	-	1,570,802,366	-	1,570,802,366
41	876,749,586,230	25,975,842,401	25,975,842,401	-	1,422,596,236	-	1,422,596,236
42	925,108,693,630	25,138,071,428	25,138,071,428	-	1,283,650,131	-	1,283,650,131
43	978,166,084,295	24,242,239,651	24,242,239,651	-	1,154,224,140	-	1,154,224,140
44	1,036,338,340,874	23,301,654,641	23,301,654,641	-	1,034,443,734	-	1,034,443,734
45	1,100,057,500,550	22,325,061,748	22,325,061,748	-	924,092,573	-	924,092,573
46	1,169,777,442,406	21,319,893,378	21,319,893,378	-	822,830,798	-	822,830,798
47	1,245,976,970,543	20,293,737,677	20,293,737,677	-	730,281,420	-	730,281,420
48	1,329,161,449,183	19,252,714,198	19,252,714,198	-	645,985,653	-	645,985,653
49	1,419,866,491,498	18,202,312,939	18,202,312,939	-	569,456,014	-	569,456,014



Single Discount Rate Development

PVs of Projected Benefits Beginning September 1, 2021 (continued)

Year	Projected Beginning Plan Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of Benefit Payments using Single Discount Rate (sdr)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v ^{^(a)-5}	(g)=(e)*vf ^{^(a)-5}	(h)=(c)/(1+sdr) ^{^(a)-5}
50	\$1,518,660,928,936	\$ 17,147,917,942	\$ 17,147,917,942	\$ -	\$ 500,204,625	\$ -	\$ 500,204,625
51	1,626,149,384,061	16,094,620,987	16,094,620,987	-	437,743,554	-	437,743,554
52	1,742,975,259,939	15,049,499,218	15,049,499,218	-	381,648,670	-	381,648,670
53	1,869,821,292,475	14,018,255,668	14,018,255,668	-	331,465,537	-	331,465,537
54	2,007,413,967,743	13,004,415,005	13,004,415,005	-	286,706,754	-	286,706,754
55	2,156,529,156,166	12,011,084,218	12,011,084,218	-	246,906,211	-	246,906,211
56	2,317,996,165,232	11,041,478,565	11,041,478,565	-	211,631,220	-	211,631,220
57	2,492,701,501,076	10,098,791,917	10,098,791,917	-	180,478,147	-	180,478,147
58	2,681,593,054,107	9,186,164,716	9,186,164,716	-	153,070,721	-	153,070,721
59	2,885,684,620,213	8,306,752,107	8,306,752,107	-	129,060,056	-	129,060,056
60	3,106,060,673,755	7,463,695,750	7,463,695,750	-	108,122,786	-	108,122,786
61	3,343,881,517,911	6,660,050,300	6,660,050,300	-	89,958,770	-	89,958,770
62	3,600,388,888,090	5,898,762,502	5,898,762,502	-	74,289,872	-	74,289,872
63	3,876,911,986,302	5,182,505,742	5,182,505,742	-	60,857,091	-	60,857,091
64	4,174,874,127,103	4,513,539,281	4,513,539,281	-	49,418,701	-	49,418,701
65	4,495,800,012,142	3,893,605,201	3,893,605,201	-	39,749,229	-	39,749,229
66	4,841,323,636,893	3,323,906,903	3,323,906,903	-	31,639,408	-	31,639,408
67	5,213,196,793,168	2,805,138,046	2,805,138,046	-	24,896,393	-	24,896,393
68	5,613,298,160,378	2,337,441,782	2,337,441,782	-	19,343,083	-	19,343,083
69	6,043,643,101,187	1,920,480,939	1,920,480,939	-	14,818,273	-	14,818,273
70	6,506,394,095,609	1,553,507,519	1,553,507,519	-	11,176,444	-	11,176,444
71	7,003,871,858,507	1,235,268,028	1,235,268,028	-	8,286,177	-	8,286,177
72	7,538,567,361,729	963,956,832	963,956,832	-	6,029,111	-	6,029,111
73	8,113,154,775,346	737,151,999	737,151,999	-	4,298,881	-	4,298,881
74	8,730,505,411,478	551,694,194	551,694,194	-	2,999,850	-	2,999,850
75	9,393,702,804,639	403,723,876	403,723,876	-	2,046,860	-	2,046,860
76	10,106,058,847,338	288,839,411	288,839,411	-	1,365,410	-	1,365,410
77	10,871,130,931,482	202,218,877	202,218,877	-	891,314	-	891,314
78	11,692,740,207,191	138,823,980	138,823,980	-	570,527	-	570,527
79	12,574,990,954,568	93,686,956	93,686,956	-	358,999	-	358,999
80	13,522,291,061,919	62,250,005	62,250,005	-	222,411	-	222,411
81	14,539,373,637,865	40,735,881	40,735,881	-	135,705	-	135,705
82	15,631,319,806,563	26,248,682	26,248,682	-	81,532	-	81,532
83	16,803,583,051,026	16,649,743	16,649,743	-	48,221	-	48,221
84	18,062,015,450,645	10,391,456	10,391,456	-	28,061	-	28,061
85	19,412,895,994,011	6,377,642	6,377,642	-	16,058	-	16,058
86	20,862,961,090,003	3,846,931	3,846,931	-	9,031	-	9,031
87	22,419,437,413,117	2,279,123	2,279,123	-	4,989	-	4,989
88	24,090,077,228,542	1,325,756	1,325,756	-	2,706	-	2,706
89	25,883,196,351,406	756,783	756,783	-	1,440	-	1,440
90	27,807,714,914,691	423,533	423,533	-	752	-	752
91	29,873,201,132,314	232,278	232,278	-	384	-	384
92	32,089,918,263,438	124,835	124,835	-	193	-	193
93	34,468,875,003,132	65,576	65,576	-	94	-	94
94	37,021,879,541,091	33,452	33,452	-	45	-	45
95	39,761,597,549,156	16,420	16,420	-	21	-	21
96	42,701,614,380,133	7,716	7,716	-	9	-	9
97	45,856,501,781,411	3,606	3,606	-	4	-	4
98	49,241,889,449,146	1,724	1,724	-	2	-	2
99	52,874,541,773,434	895	895	-	1	-	1
Totals					\$ 252,230,555,591	\$ -	\$ 252,230,555,591

