DEFINED BENEFIT PENSION PLAN FOR EMPLOYEES OF THE ORANGE COUNTY LIBRARY DISTRICT

A DEFINED BENEFIT ACTUARIAL VALUATION

AS OF JANUARY 1, 2020

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March 12, 2020

CONFIDENTIAL
Mr. Kristopher Shoemaker
Orange County Library System
101 East Central Blvd.
Orlando, FL 32801

Re: Defined Benefit Pension Plan for Employees of the Orange County Library District

Dear Kris:

We are pleased to present our Actuarial Valuation Report for Plan Year beginning January 1, 2020.

A summary of the principal results of the valuation is provided for your convenience on pages 1 through 3. Details supporting the cost calculations, as well as other information designed to assist you and your accountant in preparing your reports, are also included.

The actuarially determined contribution for the 2020 plan year, after incorporating the 3 assumption changes presented under separate cove, is $457,146 and was developed as follows:

Normal Cost (end of year) plus	$457,146
Amortization Payment (end of year)	$0
Total Contribution Requirement	$457,146

The assumption changes relate to: the expected retirement age, the expense load (to Normal Cost) and the mortality tables. The mortality tables were updated to match the base tables used in the most recent Florida Retirement System Pension Plan actuarial valuation, as required by Florida Statutes. Based on these assumption changes, we continue to recommend the Plan Sponsor make a contribution at least equal to actuarially determined amount shown above since (the closed group of) participants continue to accrue benefits under the plan.

We would be happy to answer any questions you may have regarding this report. We will forward a copy of the valuation report to the State of Florida for review upon your approval.

Sincerely,

Frederica S. Daniels, FCA, EA, MAAA
Vice President and Managing Actuary

**DEFINED BENEFIT PENSION PLAN FOR EMPLOYEES OF
THE ORANGE COUNTY LIBRARY DISTRICT**

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PRINCIPAL RESULTS OF THE VALUATION

Below is a summary of the principal results of this year's valuation compared with the previous valuation. Amounts for each valuation period reflect the actuarial cost method, assumptions and plan benefits in effect at that time.

CONTRIBUTION LEVELS	As of January 1, 2019	As of January 1, 2020
Actuarially Determined Contribution (E.O.Y.)	$ 1,128,340	$ 457,146
Normal Cost	$ 444,907	$ 428,240
Covered Payroll	$ 4,134,169	$ 3,880,611
Normal Cost as a percentage of Covered Payroll	10.76%	11.04%
SUPPORTING INFORMATION		
Actuarial Value of Assets	$ 43,524,639	$ 51,618,578
Present Value of Accumulated Benefits	$ 42,106,689	$ 39,059,292
Funding Ratio - Actuarial Value of Plan Assets as Percentage of Present Value of Accumulated Benefits	103.4%	132.2%
Number of lives in the Valuation	288	281
Valuation Interest Rate	6.75%	6.75%
Measurement Date	1/1/2019	1/1/2020

VALUATION AS OF 1/1/2020

EXECUTIVE SUMMARY

Purpose and Scope

The principal purposes of this actuarial valuation report are:

1. To present our calculation of the actuarially determined contribution for the plan year beginning January 1, 2020,
2. To review plan experience during the plan year ending December 31, 2019 and the funded status of the plan as of January 1, 2020,
3. To provide information required by the reporting and disclosure requirements of the State of Florida and the Internal Revenue Code, and
4. To provide an assessment and disclosure of risk with respect to pension obligations and contributions.

The valuation is based upon employee data and financial information provided by the plan sponsor. This data was not audited or otherwise verified by us other than for tests of reasonable consistency with prior year data.

Risk Assessment

This report includes information related to Actuarial Standard of Practice No. 51 (ASOP 51), Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Contributions – see Section III.

Traditionally, the focus of valuation reports has centered around the current funded status of the Plan, experience during the prior year, and contribution requirements for the current year. This is now supplemented with additional information regarding risks that plan sponsors face as well as more historical information and measurements.

As a note, this report does not provide risk assessments related to potential legislative and regulatory changes, investment advice, or assessments of the ability or willingness of plan sponsors to make contributions to the Plan. If the plan sponsor is interested in additional assessment of these risks, please contact us to perform additional projections under various scenarios or stochastic forecast modeling on these plan risks.

The next section provides a brief description of the financial risks to the Plan. Please see the ASOP 51 (Risk Assessment) Section of this report for additional information on these topics.

The ratio of assets to liabilities is referred to as the funded ratio and the difference is the unfunded liability. The Actuarially Determined Contribution ("ADC") is the sum of the normal cost (the present value of benefits accruing to active participants, if any, plus expenses), plus an amortization of the unfunded liability, generally over a 10 or 20-year period. Various risks described below can impact the funded ratio and ADC to different degrees.

- Investment Risk
- Interest Rate Risk
- Longevity Risk
- Demographic Risk

Additional information is provided in the ASOP 51 Section of this report.

VALUATION AS OF 1/1/2020

EXECUTIVE SUMMARY
(Continued)

Plan Experience

During the plan year ended December 31, 2019, the number of active participants decreased from 76 to 70. As of the valuation date, there are 63 deferred vested employees, 12 remaining employees who transferred to the Money Purchase Plan on January 1, 2007, and 136 retirees.

The Plan experienced a net actuarial gain of approximately $6,813,000 during 2019. The actuarial value of plan assets increased from $43,524,639 to $51,618,578. The investment return was approximately 21.60%. The investment return assumption used in 2019 was 6.75%, so the investment return on plan assets created an actuarial experience gain of about $6,281,000.

In addition, there was a net liability gain of approximately $532,000. This gain is mainly due to early retirements, a large number of deaths and other experience different from that assumed.

Plan Provisions

There were no plan changes reflected in this year's valuation report.

Actuarial Methods and Assumptions

Actuarial methods and assumptions used in the January 1, 2020 valuation report are the same as those used in the January 1, 2019 report, with the exception of the retirement rate assumption, expense load, and mortality table. The discount rate used to value liabilities remains at 6.75% and the assumed salary increases remains at 4.5%. Mortality was updated to PubG-2010, below median, amounts-weighted mortality tables (by gender) with generational improvement scale MP-2018. The expense load now equals the prior year's administrative expenses, rounded up to the nearest $1,000 (versus a flat 3% load on liabilities, which became proportionately out of range). The new retirement assumption uses a table that incorporates graded rates by age (rather than a single age of 65). These changes were made based on the results of an experience study completed in April of 2019. Liabilities decreased $4,604,295 or about 9.4%, as a result of these changes. Please see the Summary of Actuarial Assumptions and Methods section of this report for more details about the assumptions used in this valuation.

Plan Contributions

The actuarially determined contribution (ADC) for plan year January 1, 2020 through December 31, 2020 is $457,146. Absent the 3 assumption changes, the ADC would have been $427,399. This year's ADC fell dramatically from last year's level of $1,128,340 due to the elimination of all prior unfunded liability amortization bases (which cease to exist as a result of the plan becoming fully funded once again, due to the significant investment gains during 2019).

Funded Status

Plan assets, as a percentage of the present value of accrued benefits, increased from 103.4% to 132.2%, due to the large investment gain during this past year and the assumption changes.

VALUATION AS OF 1/1/2020

FLORIDA REQUIREMENTS

Florida requires that the funding of pension plans take into account:

1. Subsidized early retirement benefits.

2. Benefits continuing to accrue subsequent to expected retirement.

3. A current mortality table assumption with life expectancies and mortality improvement scales used in either of the two most recently published valuation reports for the FRS pension plan. However, the collar and risk class factors must be representative of the current plan's population.

Early retirement generally produced an actuarial gain for this plan based on the use of a uniform age 65 retirement assumption for everyone. With retirement rates now updated to a graded scale based on age, early retirements can create a loss for the plan. Benefits are reduced 5% per year for each year that early retirement precedes normal retirement.

The Late Retirement Benefit is the accrued benefit at the Late Retirement Date. The benefit forgone for the year that retirement is delayed is more valuable than the additional accrual.

Overtime pay in excess of 300 hours per plan year cannot be included in the definition of yearly compensation used for determining average compensation under the plan's benefit formula. Compensation must also exclude payments for accrued unused sick or annual leave. This rule is effective for non-collectively bargained service earned on/after 7/1/2011 or for service earned under collectively bargained agreements entered into on/after 7/1/2011.

DEFINED BENEFIT PENSION PLAN FOR EMPLOYEES OF THE ORANGE COUNTY LIBRARY DISTRICT

FINANCIAL STATEMENT AS OF 1/1/2020

ASSETS	1/1/2019	1/1/2020
Cash and Money Market Funds	467,024	124,642
Fixed Income	11,570,566	12,562,234
Equities	28,839,852	35,512,845
Alternative Investments (Real Estate)	2,668,993	3,441,367
Total Investments	43,546,435	51,641,088
Accrued Income	0	0
Other Assets *	0	0
Total Assets	43,546,435	51,641,088
LIABILITIES AND NET ASSETS		
Accounts Payable	21,796	22,510
Other Liabilities *	0	0
Total Liabilities	21,796	22,510

* Represents broker activity for investment trades pending as of the valuation date.

Net Assets	43,524,639	51,618,578
STATEMENT OF RECEIPTS AND DISBURSEMENTS		
Net Assets at Beginning of Year		43,524,639
Contributions Received or Receivable		
Employer	1,128,340	
Employee	0	
Total Contributions		1,128,340
Fixed Income Interest		332,519
Stock Dividends		731,010
Other Dividends		0
Realized Appreciation		706,447
Unrealized Appreciation		7,502,418
Total Income		10,400,734
Distribution of Benefits		
Monthly Benefit Payments	2,217,485	
Total Distributions		2,217,485
Administrative Expenses		17,386
Investment Related Expenses		71,924
Total Expenses		2,306,795
Net Income/(loss)		8,093,939
Actuarial Value of Assets at Year End		51,618,578
Gross Investment Return:		**21.60%**

VALUATION RESULTS AS OF 1/1/2020

1. PRESENT VALUE OF FUTURE BENEFITS

The value of all projected retirement, death and vested termination benefits projected to be paid to current plan participants, discounted to the valuation date with interest, mortality and withdrawal rates.

	Lives	Total
Active	70	19,700,663
Terminated / Inactive	75	2,651,237
Retired	136	25,767,438
Total	281	48,119,338

2. VALUATION ASSETS	51,618,578
3. ACTUARIAL ACCRUED LIABILITY	44,466,563
4. ACTUAL UNFUNDED ACTUARIAL ACCRUED LIABILITY	(7,152,015)
5. UNFUNDED ACTUARIAL ACCRUED LIABILITY (FOR ADC)	0

6. EXPECTED UNFUNDED ACCRUED LIABILITY

(a) Prior Unfunded Accrued Liability	4,642,731
(b) Prior Normal Cost	444,907
(c) Interest on (a) + (b)	343,416
(d) Employer Contributions	1,128,340
(e) Interest on Employer Contributions	37,460
(f) Increase/(Decrease) due to Change in Assumptions/Cost Method	(4,604,295)
(g) Total Expected Unfunded Accrued Liability: (a) + (b) + (c) - (e) - (e) + (f)	(339,041)

7. ACTUARIAL GAIN/(LOSS)	6,812,974

8. TOTAL NORMAL COST

(a) Employer Normal Cost	410,240
(b) Expense Load	18,000
(c) Total Normal Cost: (a) + (b)	428,240

CONTRIBUTION REQUIREMENTS FOR PLAN YEAR ENDING 12/31/2020

ACTUARIALLY DETERMINED CONTRIBUTION (ADC)

(1) Normal Cost		428,240
(2) Outstanding Charge Base	0	
(3) Amortization of Outstanding Charge Base (see below)		0
(4) Interest Charge		28,906
(5) Total Charges		457,146

AMORTIZATION SCHEDULE FOR ADC

Description	Year Est.	Initial Amount	Outstanding Balance	Amortization Payment	Years Remaining
Unfunded Accrued Liability	2020	0	0	0	10

GAIN/LOSS ANALYSIS

I. LIABILITY GAIN/(LOSS)

(1) EAN Accrued Liability as of 1/1/2019	48,167,370
(2) EAN Normal Cost for 2019	444,907
(3) Benefit Payments during 2019	(2,217,485)
(4) Net Interest	3,207,711
(5) Increase/(Decrease) due to Change in Assumptions/Cost Method	(4,604,295)
(6) Expected EAN AL as of 1/1/2020 (1 + 2 + 3 + 4 + 5)	44,998,208
(6) Actual EAN Accrued Liability as of 1/1/2020	44,466,563
(7) Liability Gain/(Loss) (5 - 6)	531,645

II. ASSET GAIN/(LOSS)

(1) Actuarial Value of Assets as of 1/1/2019	43,524,639
(2) Employer Contributions during 2019	1,128,340
(3) Benefit Payments during 2019	(2,217,485)
(4) Net Interest	2,901,755
(5) Expected Actuarial Value of Assets as of 1/1/2020 (1 + 2 + 3 + 4)	45,337,249
(6) Actual Actuarial Value of Assets as of 1/1/2020	51,618,578
(7) Asset Gain/(Loss) (6 - 5)	6,281,329

III. NET ACTUARIAL GAIN/(LOSS) (I.7 + II.7) 6,812,974

PARTICIPANT DATA AS OF 1/1/2020

Active employees under retirement age	
Number	63
Total annual compensation	3,880,611
Average accrued benefit	2,058.31
Average projected benefit	4,291.69
Average attained age	54.54
Average prior service	23.05
Active employees over retirement age	
Number	7
Average accrued benefit	2,251.21
Average attained age	71.06
Average prior service	25.38
Employees Transferred to the Money Purchase Plan	
Number	12
Average accrued benefit	125.07
Average attained age	45.65
Terminated deferred vested, deceased and disabled employees	
Number	63
Average accrued benefit	508.63
Average attained age	50.32
Retired employees, beneficiaries and contingent annuitants	
Number	136
Average monthly benefit	1,375.21
Average attained age	71.35

RECONCILIATION OF PARTICIPANT STATUS

	Active	Inactive	Transfer to MP Plan	Deferred Vested	Retired	Total
Prior Valuation	76	0	13	62	137	288
Terminated - not vested	0	0	0	0	0	0
Terminated - vested	0	0	(1)	1	0	0
Retired	(5)	0	0	0	5	0
Cashed Out	0	0	0	0	0	0
Annuity Purchase	0	0	0	0	0	0
New Entrants/Adjustment:	0	0	0	0	0	0
Deaths	(1)	0	0	0	(6)	(7)
Current Valuation	70	0	12	63	136	281

SUMMARY OF PLAN PROVISIONS

Effective Date	7/1/1952
Plan Year Beginning	1/1/2020
Eligibility	
Requirements	Minimum age: 0; Minimum months of service: 12
Entry Dates	Date of meeting the requirements for employees hired on or before 12/31/2006. No participants will be allowed to enter the Plan after 1/1/2008.
Year of Service	All days worked as a full-time employee. Measured as elapsed time from Date of Participation.
Year of Vesting Service	All days worked as a full-time employee. Measured as elapsed time from date of hire as a full-time employee.
Normal Retirement Date	Day participant turns 65 or, if later, completion of 4 Years of Vesting Service in the Plan.
Normal Retirement Benefit	
Benefit Formula	2% of average monthly compensation times Years of Service up to 30 years.
Average Monthly Compensation	Monthly average of compensation for the 5 years of highest compensation of the last 10 years. Maximum annual compensation: $285,000 for 2020.
Maximum Annual Benefit	$230,000 as adjusted per IRC Sec. 415 for retirement age other than Social Security Retirement Age and annuity form.
Normal Form of Benefit	Life Annuity with modified cash refund.
Accrued Benefit	Normal Retirement Benefit based on earnings and Years of Service to date.
Cost of Living	2% per year following year of retirement (prorated for partial year in initial year of retirement).
Early Retirement Benefit	Minimum Age: 55 Minimum Service: 9 Years of Service Benefit Amount: Accrued Benefit, reduced by 0.417% for each month by which early retirement precedes normal retirement.
Pre-Retirement Death Benefit	Return of employee contributions with interest.
Vested Termination Benefit	Upon termination after 4 Years of Vesting Service, 100% of the Accrued Benefit, deferred to Normal Retirement Date.

SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS

In order to determine the size of the liabilities and costs for a given level of benefits, an actuary must make certain assumptions as to future experience among the covered group of employees and as to the rate of investment return. In particular, assumptions are made regarding rates of employment termination, disability and mortality, in order to determine the likelihood of each employee reaching retirement age. In addition, since benefits are based in part on salary, it is also necessary to project the amount of each employee's salary at the time he or she retires. Investment earnings are a source of income to the pension plan fund and the actuary makes an assumption as to the rate to be earned each year in the future.

As a result of these assumptions applied to the covered group of participants, a total liability for future retirement benefits is determined. This total liability is then apportioned for payment to future years by use of an actuarial cost method. There are many different cost methods in use, some resulting in increasing annual contributions, some causing decreasing annual contributions, and others which result in level contributions. The level contribution method is the most common. Below is a summary of the actuarial methods and assumptions used in this valuation.

The plan's funding policy enables the plan sponsor to meet contribution requirements. Future measurements may differ significantly from the information contained within this report. These measurements will be based on the market value of assets, which varies based on the underlying portfolio experience, as well as plan sponsor contributions, benefit payments and expenses paid from plan assets. Liability calculations will be produced in accordance with current census data, as well as the interest rates and mortality tables in effect at that time. There has been no analysis of potential future impacts associated with this report. Please refer to the plan's Funding Policy for a more detailed disclosure of how the policy enables the plan sponsor to meet contribution requirements.

LIABILITY COST METHOD

Entry Age Normal Cost Method (EAN). Under this method, the annual cost is equal to the normal cost, plus a payment to amortize the unfunded accrued liability over a fixed (open) period of 10 years.

The normal cost is the sum of individual normal costs, determined as a level percentage of compensation which would have been necessary to fund the employee's projected retirement, death and withdrawal benefits, from entry age (the age at which the employee would have entered the plan had it been in effect on his employment date), to his retirement age. Thus, the dollar normal cost is expected to increase with the salary projection assumption.

The actuarial accrued liability is the accumulation, based on the actuarial assumptions, of all assumed prior normal costs. Thus, it represents the amount of reserves, which would be held by the plan, had it always been in effect for the present group of participants and had plan experience followed that predicted by the actuarial assumptions. The unfunded accrued liability is the excess, if any, of the accrued liability over the plan assets.

SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS
(Continued)

Actuarial gains and losses arising from differences between plan experience and that predicted by the actuarial assumptions, as measured by the difference between actual and expected unfunded accrued liabilities, will be recognized over 10 years as part of the unfunded accrued liability amortization payment.

ATTRIBUTION PARAMETERS

Attribution parameters determine how growth in the benefit formula is allocated to years of service. For this plan, the attribution parameters use accrual rate prorations by component. This method attributes the benefit separately for each component of the benefit formula, based on the credited service. If there are no accrual definitions in the benefit formula, then the entire projected benefit is assigned to past service (and considered fully accrued as of the valuation date). This results in "natural" or "direct differencing" attribution.

ASSET VALUATION METHOD

The asset valuation method measures the current market value of assets, as reported by the Trustee, plus any accrued contributions.

ACTUARIAL ASSUMPTIONS

Pre-Retirement and Post-Retirement Mortality – PubG-2010, Below-Median, Amounts-Weighted Mortality Tables (by gender), with generational improvement scale MP2018 (adopted with the 1/1/2020 valuation)

Investment Return – 6.75% per annum. This return reflects the anticipated gross long-term rate of return on plan assets based on the plan’s current and expected future asset portfolio, as supported by the plan’s investment advisor. The Plan Administrators have determined that a 6.75% rate of return is reasonable for the current year, each of the next several years, and for the long term thereafter. This rate is reasonable in our opinion.

Retirement Age – The retirement assumptions are now graded rates by age, shown in the chart below, and were updated effective with the 1/1/2020 valuation based on the experience study completed in April of 2019. The average age at commencement among all current retirees is 61. The average age at commencement for those individuals who retired in the past 5 years is about 62. In addition, there are currently 7 actives and 1 terminated vested participant who are past age 65 and have yet to commence payments.

Age	Rate	Age	Rate	Age	Rate
55	15%	61-63	10%	66-67	25%
56-59	5%	64	20%	68-74	20%
60	15%	65	40%	75	100%

SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS (Continued)

Withdrawal Rates – The assumption currently incorporates rates from the Hartford Life Turnover Table 1. The actual experience of the Plan has generally been in-line with the assumption, as reviewed with the experience study completed in April of 2019.

	Sample Pre-retirement Withdrawal Rates	
Age	Male	Female
20	10.000%	15.000%
25	10.000%	15.000%
30	7.500%	10.000%
35	5.000%	7.500%
40	3.000%	5.000%
45	1.500%	2.500%
50	0.000%	0.000%
55	0.000%	0.000%
60	0.000%	0.000%

The assumption is not anticipated to produce significant cumulative actuarial gains or losses over the measurement period.

Salary Scale Projections – 4.5% per annum.
The assumption selected is consistent with the plan sponsor's current compensation practice, as discussed and analyzed with the experience study completed in April of 2019. No significant changes are expected in the near future.

Disability Rates – None

Expense Loading – $18,000, prior year administrative expenses, rounded up to nearest $1,000. This assumption was updated effective 1/1/2020 based on results from the April 2019 study.

Payroll Growth Rate – None (for amortization purposes)

Cost of Living Increases – The Plan provides for an annual COLA of 2.0% per annum. The valuation reflects an assumption of 2.0% per annum, as an estimate of the long-term COLA increases.

Long-Term Inflation – The assumption of 2.0% follows the current plan provisions.

SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS (Continued)

Maximum Compensation – Increases in this assumption correspond to the expectation in inflation.

Maximum Benefit – Increases in this assumption correspond to the expectation in inflation.

Marital Assumptions:
A. 80% of population is married
B. 80% of married participants elect a 50% Joint & Survivor annuity payment upon retirement
C. Spouses are assumed to be of the opposite gender of the participant
D. Husbands are assumed to be 3 years older than wives

Plan Provisions Not Valued – None

Additional Disclosure Items:
These assumptions are reflective of the participant data. We will continue to periodically review the population and retirement elections and make any appropriate updates to these assumptions.

Vested benefits are based on the Plan document's vesting schedule based on Years of Vesting Service. Please refer to the Summary of Plan Provisions section of this report for requirements for particular benefits.

Early retirement subsidies are only valued once participants become eligible by meeting the specified requirements. Please refer to the Summary of Plan Provisions section of this report for such requirements.

Death benefits are treated as vested benefits for liability calculation purposes.

VALUATION RESULTS AS OF 1/1/2020

COMPARATIVE SUMMARY OF PRINCIPAL VALUATION RESULTS

This exhibit is intended to satisfy Part VII, Chapter 112 of the Florida Statutes. Please note that some of the information required by Chapter 60T-1 of F.A.C. rules governing actuarial reports is located in the Exhibits that make up this report.

		As of January 1, 2019		As of January 1, 2020
A. PARTICIPANT DATA				
1. Number included				
a. Actives		76		70
b. Inactives		0		0
c. Transfers		13		12
d. Terminated Vested		62		63
e. Retirees		137		136
2. Total annual payroll of active employees included	$	4,134,169	$	3,880,611
3. Balance of employee contributions	$	69,554	$	56,136
4. Balance of employee contributions with interest for actives and inactives	$	272,764	$	231,659
B. ASSETS				
1. Actuarial value	$	43,524,639	$	51,618,578
2. Statement value	$	43,524,639	$	51,618,578
3. Market value	$	43,524,639	$	51,618,578
C. LIABILITIES				
1. Present Value of Accrued Benefits				
a. Accrued to date vested	$	42,106,689	$	39,059,292
b. Accrued to date non-vested	$	0	$	0
c. Total Accrued	$	42,106,689	$	39,059,292
2. Unfunded Accrued Liability	$	0	$	0

VALUATION RESULTS AS OF 1/1/2020

COMPARATIVE SUMMARY OF PRINCIPAL VALUATION RESULTS (continued)

C. LIABILITIES (continued)	As of January 1, 2019	As of January 1, 2020
3. Present Value of Active Members		
a. Future salaries at present age	$ 38,740,731	$ 47,248,463
b. Future contributions at present age	$ 0	$ 0
4. Breakdown of the Present Value of Future Benefits		
a. Active Participants		
i. Retirement benefits	$ 24,029,443	$ 19,630,674
ii. Termination/Vesting	$ 83,429	$ 63,821
iii. Death benefits	$ 6,089	$ 6,168
iv. Disability benefits	$ 0	$ 0
v. Return of contributions	$ 0	$ 0
vi. Subtotal	$ 24,118,961	$ 19,700,663
b. Retired Members	$ 25,089,089	$ 25,767,438
c. Terminated Vested / Inactive	$ 2,551,450	$ 2,651,237
d. Total	$ 51,759,500	$ 48,119,338

VALUATION RESULTS AS OF 1/1/2020

COMPARATIVE SUMMARY OF PRINCIPAL VALUATION RESULTS (continued)

D. PENSION COST	As of January 1, 2019	As of January 1, 2020
1. Normal Cost	$ 444,907	$ 428,240
2. Payment Required to Amortize Unfunded Actuarial Liabilities	$ 612,086	$ 0
3. Net interest on (1) + (2) to the end of the plan year	$ 71,347	$ 28,906
4. Actuarially Determined Contribution [(1) + (2) + (3)]	$ 1,128,340	$ 457,146
5. Contribution as a percent of payroll	27.29%	11.78%

The contribution levels are calculated as payable on the last day of the plan year.

E. PAST CONTRIBUTIONS	2018 Plan Year	2019 Plan Year
1. Actuarially Determined Contribution (assuming end-of-year deposit)	$ 498,028	$ 1,128,340
2. Actual Contributions made by Orange County Library District	$ 498,025	$ 1,128,340
3. Interest Accumulated on Monthy Contributions from date paid	$ 16,534	$ 37,460
4. Total Contributions (2) + (3)	$ 514,559	$ 1,165,800

VALUATION RESULTS AS OF 1/1/2020

COMPARATIVE SUMMARY OF PRINCIPAL VALUATION RESULTS (continued)

F. SALARY AND INVESTMENT EXPERIENCE COMPARISONS

1. Comparison of Actual and Assumed Salary Increases

Year Ended	Actual	Assumed
12/31/2019	4.50%	4.50%
12/31/2018	4.25%	4.50%
12/31/2017	3.70%	4.50%
12/31/2016	3.57%	4.50%
12/31/2015	3.01%	5.00%
12/31/2014	3.28%	5.00%
12/31/2013	3.89%	5.00%
12/31/2012	0.77%	5.00%
12/31/2011	0.09%	5.00%
12/31/2010	1.08%	5.00%

2. Comparison of Actual and Assumed Investment Returns

Year Ended	Actual	Assumed
12/31/2019	21.60%	6.75%
12/31/2018	-7.32%	6.75%
12/31/2017	15.04%	6.75%
12/31/2016	7.49%	6.75%
12/31/2015	-0.63%	7.00%
12/31/2014	6.28%	7.00%
12/31/2013	18.38%	7.00%
12/31/2012	12.01%	7.00%
12/31/2011	-1.16%	7.00%
12/31/2010	13.49%	7.00%

G. FOUR YEAR SCHEDULE OF UNAMORTIZED LIABILITIES

Date of Establishment	1/1/2020	1/1/2021	1/1/2022	1/1/2023
1/1/2020	0	0	0	0

All amortization payments are calculated as payable on the first day of the plan year.
The last year of amortization payment for the Unfunded Accrued Liability base will be in 2029

H. DISCLOSURE

All benefits provided by the Plan have been taken into account in preparing the actuarial valuation. Additionally, participant reconciliation and demographic information are located on page 9 of this report.

ASOP 51 - ASSESSMENT AND DISCLOSURE OF RISK

Additional Information Regarding Assessment and Disclosure of Risks

The valuation of pension liabilities requires the use of certain assumptions to estimate events that are expected to occur in the future. These events can be economic, non-economic or demographic in nature. When actual experience in the future differs from the expected experience there is a direct effect on future pension liabilities. This in turn can impact both the funded position of the pension plan as well as the actuarially determined contribution ("ADC").

Certain variables carry more risk than others. Included below is a brief explanation of those variables that can potentially have a significant effect on the plan's future financial condition.

Actuarially Determined Contribution Compared to Actual Contribution

The ADC is calculated using an actuarial funding method. The ADC can vary from year to year as actual experience differs from that expected. The funding method's intent is that if the ADC is deposited by the plan sponsor each year, then the plan would be sufficiently funded over the life of the plan so that promised benefits could be paid to all participants. A 2-year comparison of the ADC vs. contribution deposited by the plan sponsor for each plan year is shown in the Comparative Summary of Results section. The Sponsor currently contributes as least 100% of the ADC. However, if actual contributions deposited are consistently lower than the ADCs then, barring unexpected actuarial gains, future contributions will need to be greater.

Risk Assessments

Investment volatility risk. There is an expectation that the assets of the pension plan will return an average long-term rate each year. If the actual annual net return on plan assets is consistently below the expected return, then both the funded ratio and ADC would be negatively impacted – the funded ratio would be lower than expected and the ADC would be higher. For example, an asset "loss" of 10% (about $5.169M based on current values) in a given year would hypothetically cause the amortization portion of the ADC to increase on average by about $727,000 for each of the next 10 years. Also, the funded ratio would decrease by about 13 percentage points.

Investment return risk. The interest rate (which is equal to the Plan's expected return on assets rate) is used to discount the projected benefit payments from the Plan to calculate the present value of the liabilities (Accrued Liability). Decreases in the interest rate (as noted above) will lead to increases in the Accrued Liability and the Normal Cost, which may increase contribution requirements. As an example, a decrease of 25 basis points would lead to an increase in Accrued Liability of about 3% and in Normal Cost of about 7%, yielding an increase in the ADC of about $197,000 for each of the next 10 years. This dollar amount translates to an increase of 5 percentage points in the ADC as a % of pay (from 12% to 17% for 2020). Absent any further changes to the interest rate, or future asset and liability gains or losses, the Normal Cost is expected to remain constant each year as a level % of payroll based on the Plan's cost method.

ASOP 51 - ASSESSMENT AND DISCLOSURE OF RISK (continued)

Longevity risk. To the extent participants live longer than expected relative to the mortality assumptions, liabilities (and, thus, the ADC) will increase. The Florida Retirement System ("FRS") Plan adopted new mortality table and projection scale assumptions in 2019 that are required to be used for other defined benefit pension plans in the state of Florida for funding valuations. The slight decrease in life expectancy predicted by those tables and projection scales decreased the Accrued Liability by a minimal 0.4%, or $194,000 as of January 1, 2020. However, future improvements in mortality could further increase Accrued Liability.

Demographic risk. Several other assumptions are made with respect to anticipated plan experience, including rates of termination, disability, and the retirement age. To the extent actual experience differs from expected, plan liabilities and normal cost can vary up or down.

A significant demographic risk for this Plan is the retirement rate. The retirement assumption is now a table with graded rates by age, rather than a stagnant age of 65 for everyone. The average age of the retiree population has decreased to about 62 over the past 5 years. If participants retire at any age prior to the assumed age predicted by the table, plan liabilities may increase due to subsidized early retirement benefits. Also, to the extent participants retire later than assumed, the plan liabilities and the ADC may increase due to unplanned benefit accruals that were not funded for through prior normal costs. An experience study was completed in April of 2019 to help identify the magnitude of past gains or losses from this demographic risk. As a result, a new graded-age table was adopted for this assumption to better hedge future risk.

Salary Increases. Salary increases impact the cost of the plan and are reflected in the liabilities and the normal cost. Increases above that which are assumed will result in experience losses in the following year, while the inverse is true – lower than expected raises can lead to a decrease in liabilities and normal costs. For example, if the annual salary increase assumption of 4.5% was increased to 5.5%, liabilities would increase about 1% and the normal cost would increase about 17%, adding another $148,000 to the ADC. See page 18 of report for a 10-year history of salary experience.

Expense Load. Certain expenses related to the administration of the plan are often paid out of plan assets (to the extent allowed by law). As a way to ensure plan assets are not depleted over time due to administrative costs, an expense load (usually a flat dollar amount or a small % of plan assets) is added to the plan's normal cost, which is part of the contribution made by the plan sponsor each year. When actual administrative expenses for a given year are different from the assumed load amount, the plan will experience gains or losses that will be factored into the following year's contribution levels. Based on results from the April 2019 study, the expense load assumption was changed to a flat dollar amount, indicative of expenses from the last 5 years, to better hedge against fluctuating gains and losses.

ASOP 51 - ASSESSMENT AND DISCLOSURE OF RISK (continued)

Plan Maturity Measures

Certain statistics can help to gauge the financial strength of the pension plan as well as to help identify risk that the plan might be subject to as it matures over time. Certain plan maturity statistics for the current valuation year are included below for your review and analysis. Historical statistics incorporating some of the prior year results may be found in the Executive Summary section of this report.

Ratio of Retiree Liability to Total Plan Liability

Ratio = 25,767,438 / 44,466,563 = 57.9%

A pension plan with a high ratio (for example, more than 50%) is considered to be a relatively mature plan since the primary liability is associated with former employees who are now in pay status. As a result, a large amount of plan assets is disbursed to retired participants to satisfy the monthly payments due to this group. Plan sponsors should consult with the investment advisors to the pension plan to determine whether plan assets are invested accordingly to account for the benefit outflows. For the Library's plan, having a ratio of 57.9% (i.e. over 50%) leads to total benefit payments exceeding annual contributions (a 'negative' cash flow).

Duration of the Actuarial Accrued Liability

The duration for your pension plan is: 10.7

Duration is a measure used to indicate the sensitivity of the pension plan liability to a change in interest rates. In general, pension plans with a younger participant group tend to have a longer duration than pension plans with an older population. Plans with a longer duration are impacted more than pension plans with a shorter duration when interest rates change. For example, based on the duration of 10.7 shown above for your pension plan, for every 100-basis point increase in interest rates you could expect the pension plan liability to decrease by approximately 10.7%.

Ratio of Actuarially Determined Contribution to Total Covered Payroll

Ratio = 457,146 / 3,880,611 = 11.8%

Many plan sponsors find it helpful to look at the cost of the pension plan (on a cash basis) as a percentage of total covered payroll. Covered payroll is generally intended to mean total compensation for those employees actively accruing plan benefits during the year plan. An increase in this ratio (ADC/payroll) could be due to a number of different factors which may require further analysis. For example, the increase could be a result of a decline in the active population of a plan where participation for new employees is frozen - as the active group decreases over time, compensation for the remaining population increases due to service/raises/promotions.

ASOP 51 - ASSESSMENT AND DISCLOSURE OF RISK (continued)

Ratio of Expected Outflows to Plan Assets

Ratio = $2,309,442 / $51,618,578 = 4.5%

Outflows are defined as: Benefit Payments + Expenses. This ratio measures the liquidity and time-horizon of the plan's assets. It can be used as one of the considerations of how much of the plan's assets should be allocated to short-term fixed income (or cash). Having sufficient amounts of cash on-hand within plan assets better allows for monthly benefit payments (and expenses, if applicable) to be made throughout the year without having to liquidate funds for cash flow at unexpected points in time.

Ratio of Expected NET Outflows to Plan Assets

Ratio = -$1,852,296 / $51,618,578 = -3.6%

Net Outflows are defined as: Contributions – Outflows. This ratio represents the net cash flow of the Plan. A positive ratio means more cash is coming into plan assets than being paid out during the plan year, which is referred to as 'positive cash flow'. Thus, the opposite is true – a negative ratio means 'negative cash flow'. As a defined benefit plan matures, it (by its nature) becomes a negative net cash flow vehicle, so this ratio can be a measure of plan maturity.

Given the Library's pension plan has a negative ratio, this measure indicates the plan has a relatively shorter-term time horizon, which is also supported by the inactive lability ratio of 57.9% (as previously discussed).

Ratio of Expected (Contributions - Expenses) to Benefit Payments

Ratio = $439,146 / $2,291,442 = 19.2%

This measure helps allow a plan sponsor to better understand how the projected funded ratio may increase or decrease as of the next valuation date. If the above ratio is greater than 100%, the funded ratio is expected to increase, assuming all other plan experiences match expectations. Thus, if the ratio is below 100%, the funded status is expected to decrease (if no gains or losses). However, if this ratio measure is only slightly over/under 100% (i.e. +/- 5-10%), it may be difficult to project the change of direction in the funded status given the likelihood that experience gains or losses could have a similar impact (up or down) on the funded ratio.

ASOP 51 - ASSESSMENT AND DISCLOSURE OF RISK (continued)

Funded Status

Ratio = $51,618,578 / $44,466,563 = 116.08%

This statistic measures how well-funded the pension plan is as of a specific point in time and is based on the ratio of the plan's market value of assets to the actuarial accrued liability. The funded status is impacted primarily by investment returns, interest rate changes, and pension plan funding policies. Additional factors, such as plan benefit or assumption changes, plan demographics and actual experiences, can also impact the funded status from year to year. Investment returns lower than expected may result in a ratio decrease. A drop in the interest rate would result in liability increases and the opposite occurs when interest rates increase. To the extent more or less than the actuarially determined contribution is deposited to plan assets during the year, then the plan would be better or worse funded than expected.

Summary of Risk Assessments and Maturity Measures

While the risk due to some variables may easily be understood or predictable, there are many risks that are much more variable in nature, making it quite difficult to hedge against drastic changes in the plan's funded status. While past actuarial and demographic experience is not a perfect indicator of what the future will bring, it does provide a strong foundation for setting assumptions related to risk.

Thus, we strongly recommend a plan experience study and/or cost projections and forecasts under various scenarios or stochastic modeling be performed at least once every 4 to 5 years to determine the validity of current assumptions, methods or plan provisions. The last study was completed in April of 2019. However, before any decisions are made to adopt plan benefit or funding changes, we suggest discussions with the plan actuary and investment advisor are held by the plan sponsor to discuss types of potential actuarial or financial risks and impacts to the plan's funded status.