LOWER COLORADO RIVER AUTHORITY
RETIREMENT PLAN AND TRUST

FINANCIAL STATEMENTS AND
REQUIRED SUPPLEMENTARY INFORMATION
AS OF AND FOR THE YEARS ENDED
Dec. 31, 2019, and 2018

With Report of Independent Auditors

Lower Colorado River Authority
Retirement Plan and Trust
Financial Statements
As of and for the
Years Ended
Dec. 31, 2019, and 2018

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INDEPENDENT AUDITORS' REPORT

To the LCRA Retirement Benefits Board of Trustees
Lower Colorado River Authority Retirement Plan and Trust
Austin, Texas

We have audited the accompanying financial statements of the Lower Colorado River Authority Retirement Plan and Trust (Plan), as of and for the years ended December 31, 2019 and 2018, and the related notes to the financial statements, which collectively comprise the Plan's financial statements as listed in the table of contents.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the Plan's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Plan's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the fiduciary net position of the Plan as of December 31, 2019 and 2018, and the changes in the Plan's fiduciary net position for the years then ended in accordance with accounting principles generally accepted in the United States of America.

Emphasis of Matter

As discussed in Note 2, the financial statements present only the Plan and do not purport to, and do not, present fairly the financial position of the Lower Colorado River Authority, as of December 31, 2019 and 2018, and the changes in financial position for the years then ended in accordance with accounting principles generally accepted in the United States of America. Our opinion is not modified with respect to this matter.

Other Matter

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the required supplementary information as listed in the table of contents be presented to supplement the financial statements. Such information, although not a part of the financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the financial statements, and other knowledge we obtained during our audit of the financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Baker Tilly Virchow Krause, LLP

Austin, Texas
June 5, 2020

This section of the Lower Colorado River Authority (LCRA) Retirement Plan and Trust (Plan) financial report presents discussion and analysis of the Plan's financial performance for the years ended Dec. 31, 2019, and 2018. We encourage readers to consider the information presented here in conjunction with the financial statements that follow.

Financial Statements Overview

This discussion and analysis is intended to serve as an introduction to the Plan's financial statements, which comprise the following:

Management's Discussion and Analysis

This section provides an objective and easily readable analysis of financial activities based on currently known facts, decisions and conditions.

Statements of Fiduciary Net Position

The statements of fiduciary net position present the assets and liabilities of the Plan for the current and prior years. Investments are stated at fair value and, accordingly, unrealized appreciation and depreciation are reported in the statements of changes in fiduciary net position. Purchase and sale of investments are recorded on a trade-date basis and, accordingly, the related receivables and payables for any unsettled trades are recorded. Amounts reported may include management's estimates. Actual results could differ from those estimates.

Statements of Changes in Fiduciary Net Position

The statements of changes in fiduciary net position present information showing how the Plan's net position changed during the current period. Changes are reported when the underlying event giving rise to the change occurs, regardless of the timing of the related cash flows. Revenues and expenses are reported in these statements for some items that will only result in cash flows in future periods.

Notes to Financial Statements

The notes to the financial statements include a summary of significant accounting policies; a brief description of the Plan; disclosures regarding liabilities, funding policies, investments and administrative expenses; and a disclosure of the net pension liability of the employer that are deemed necessary for a full understanding of the data provided in the Plan's financial statements.

Required Supplementary Information

Required supplementary information presents the schedule of changes in the employer's net pension liability and related ratios, the schedule of employer contributions, the schedule of investment returns and the notes to required supplementary information. These are a required part of the financial statements, required by the Governmental Accounting Standards Board.

Collectively, this information presents the net position held in trust for pension benefits as of the end of each period and summarizes the changes in net position for the period.

Financial Highlights

Condensed Statements of Fiduciary Net Position
(Dollars in thousands)

	Dec. 31, 2019	Dec. 31, 2018	Dec. 31, 2017
Assets			
Cash and cash equivalents	$ 11,627	$ 5,074	$ 15,432
Investments at fair value	417,200	378,836	413,611
Receivables	2,705	635	920
Total assets	431,532	384,545	429,963
Liabilities			
Total liabilities	1,654	1,907	5,158
Net position restricted for pensions	$ 429,878	$ 382,638	$ 424,805

Net position restricted for pensions increased by approximately $47.2 million, or 12.4%, as of Dec. 31, 2019. The primary driver for the increase was stronger market conditions in 2019 compared to the year ended Dec. 31, 2018. Net position restricted for pensions decreased by approximately $42.2 million, or 9.9%, as of Dec. 31, 2018, driven primarily by an economic downturn in Dec. 2018 that eclipsed relatively stable market conditions throughout 2018 compared to stronger market performance for the year-ended Dec. 31, 2017.

Total investments were $417.2 million as of Dec. 31, 2019, an increase of $38.4 million, or 10.1%, for the year ended Dec. 31, 2019. The primary driver for the increase was stronger market conditions in 2019 compared to the year ended Dec. 31, 2018. Total investments were $378.8 million as of Dec. 31, 2018, a decrease of $34.8 million, or 8.4%, for the year ended, from the previous year. The primary driver for the decrease was the economic downturn in December 2018.

Liabilities decreased by $0.3 million, or 13.3%, from Dec. 31, 2018, to Dec. 31, 2019, and decreased by $3.3 million, or 63%, from Dec. 31, 2017, to Dec. 31, 2018. Both the number and the amounts of accrued lump sum payouts were lower on Dec. 31, 2019. The decrease from Dec. 31, 2017, to Dec. 31, 2018, was primarily due to a significantly lower number and amount of accrued lump sum payouts at year-end.

Condensed Statements of Changes in Fiduciary Net Position
(Dollars in thousands)

	12 Months Ended Dec. 31, 2019	12 Months Ended Dec. 31, 2018	12 Months Ended Dec. 31, 2017
Additions			
Contributions	$ 24,695	$ 24,218	$ 23,130
Investment income (loss)	68,883	(23,060)	47,240
Less investment expenses	(3,188)	(3,528)	(3,532)
Net investment income (loss)	65,695	(26,588)	43,708
Total additions	90,390	(2,370)	66,838
Deductions			
Benefits paid to participants	42,896	39,713	44,837
General, administrative and other expenses	254	84	316
Total deductions	43,150	39,797	45,153
Net increase (decrease)	47,240	(42,167)	21,685
Fiduciary net position, beginning of period	382,638	424,805	403,120
Fiduciary net position, end of period	$ 429,878	$ 382,638	$ 424,805

Employer and employee contributions increased by approximately $0.5 million, or 2.0%, and increased $1.1 million, or 4.7%, for the years ended Dec. 31, 2019, and 2018, respectively. The increase from 2018 to 2019 was due to the actuarial valuation projected funding requirement approved by the Board in 2019. The increase from 2017 to 2018 was due to $3 million in additional funding approved by the Board in 2018. LCRA had unplanned savings at the end of its fiscal year and chose to contribute additional funds to the pension plan in 2018.

Net investment income significantly increased by approximately $92.3 million, or 347.1%, for the year ended Dec. 31, 2019, compared to the prior year. The primary driver for the increase was stronger market conditions in 2019 compared to the year ended Dec. 31, 2018. Net investment income decreased by approximately $70.3 million, or 160.8%, for the year ended Dec. 31, 2018, compared to the prior year. The decrease resulted from significant losses on Plan investments. While the first three quarters of 2018 experienced a stable incline in global financial markets, the fourth quarter suffered a sudden downturn that resulted in heavy losses across most major asset classes.

Investment expenses decreased $0.3 million for the year ended Dec. 31, 2019. Not all of the funds hit or exceeded their target for the year-ended Dec. 31, 2019, and as a result, incentive fees were less in 2019, versus 2018. Investment expenses for the year ended Dec. 31, 2018, was unchanged compared to the year ended Dec. 31, 2017, at $3.5 million.

The amount of benefits paid to Plan participants increased by approximately $3.2 million, or 8.0%, for the year ended Dec. 31, 2019. The increase is due to a higher dollar amount of lump-sum payments and annuity payments made in 2019 above 2018. Benefits paid for the year ended Dec. 31, 2018, decreased by approximately $5.1 million, or 11.4%. The decrease was due to the high level of lump-sum payments taken in 2017 that did not occur in 2018.

The total rate of return for the Plan's investment portfolio for the year ended Dec. 31, 2019, was 17.6% (net of fees), compared to -6.4% (net of fees) for the year ended Dec. 31, 2018. The actuarial assumed rate of return is 7.00% for 2019 and 7.25% for 2018.

The Plan's funding objective is to meet long-term benefit obligations through contributions and returns on invested funds. As of Dec. 31, 2019, the date of the most recent actuarial valuation, the Plan's funding ratio of actuarial assets as a percentage of current actuarial liabilities is 67.4%, which is more than the 62.2% as of Dec. 31, 2018.

The World Health Organization has declared a pandemic following the outbreak of COVID-19, a respiratory disease caused by a new strain of coronavirus, which is currently affecting many parts of the world, including Texas (the "Pandemic"). The Pandemic will significantly impact economic activity within the United States and the State of Texas. Financial markets, both national and international, have seen significant declines and volatility attributed to concerns over the Pandemic. The duration, scope and severity of the adverse impact resulting from the Pandemic cannot be determined at the present time. LCRA continues to monitor the spread of the pandemic and its impacts. The LCRA Pension plan is being monitored for any adverse change but at present, no assurance can be given regarding the impact of the Pandemic on LCRA's operations, finances or this plan.

Request for Information

This financial report is designed to provide a general overview of the finances of the LCRA Retirement Plan and Trust for all parties with an interest. Questions about this report or requests for additional financial information should be addressed to Pension Administrator, LCRA Retirement Plan and Trust, 3700 Lake Austin Blvd., Austin, TX 78703.

LOWER COLORADO RIVER AUTHORITY RETIREMENT PLAN AND TRUST
STATEMENTS OF FIDUCIARY NET POSITION
(Dollars in thousands)

	Dec. 31, 2019	Dec. 31, 2018
Assets		
Cash and cash equivalents	$ 11,627	$ 5,074
Investments at fair value	417,200	378,836
Receivables		
Accrued interest	568	428
Dividend	18	16
Employer contributions	1,000	-
Other receivables	1,119	191
Total receivables	2,705	635
Total assets	431,532	384,545
Liabilities		
Accrued investment expenses	-	286
Accrued administrative expenses	122	228
Benefits payable	1,532	1,393
Total liabilities	1,654	1,907
Net position restricted for pensions	$ 429,878	$ 382,638

The accompanying notes are an integral part of these financial statements.

LOWER COLORADO RIVER AUTHORITY RETIREMENT PLAN AND TRUST
STATEMENTS OF CHANGES IN FIDUCIARY NET POSITION
(Dollars in thousands)

	Years Ended Dec. 31, 2019	Years Ended Dec. 31, 2018
Additions		
Net appreciation (depreciation) on investments	$ 62,469	$ (26,842)
Interest	2,474	2,393
Dividends	200	653
Settlements, commissions and other income	3,740	736
Total investment income (loss)	68,883	(23,060)
Less investment expenses	(3,188)	(3,528)
Net investment income (loss)	65,695	(26,588)
Employer contributions	24,446	23,893
Employee contributions	249	325
Total contributions	24,695	24,218
Total additions	90,390	(2,370)
Deductions		
Benefits paid to participants	(42,896)	(39,713)
General, administrative and other expenses	(254)	(84)
Total deductions	(43,150)	(39,797)
Net increase (decrease) in net position	47,240	(42,167)
Net position restricted for pensions, beginning of period	382,638	424,805
Net position restricted for pensions, end of period	$ 429,878	$ 382,638

The accompanying notes are an integral part of these financial statements.

1. Pension Plan Description

Plan Description: The LCRA Retirement Benefits Board of Trustees (Board) is the administrator of the LCRA Retirement Plan and Trust (Plan), a single-employer defined benefit pension plan sponsored by LCRA. The Board has seven members: two LCRA Board members, two employees from upper management positions and three employees from positions other than upper management. The LCRA Board of Directors has sole authority to amend the Plan.

Benefits Provided: LCRA employees hired before May 1, 2012, are covered by the Plan. The Plan provides retirement, death and disability benefits. The Plan was amended to provide cash balance benefits for all employees employed or reemployed on or after Jan. 1, 2002, who become Plan participants. Active employees as of Dec. 31, 2001, were given the opportunity through the LCRA Retirement Choice Program to elect to become participants under cash balance provisions (Cash Balance Participants) or to remain under the pension provisions (Pension Participants).

The Pension Participants' retirement benefit for each year of service is 1.75% of the highest five-year average monthly compensation plus 0.4% of the portion of the highest five-year average monthly compensation that exceeds the monthly integration level. The monthly integration level is a sliding scale based on the calendar year in which termination of employment occurs, with the level being $3,295 for those terminating employment in 2019 and increasing to $3,300 for those terminating employment in 2020 and later. Employees become 100% vested in their retirement benefits after the required number of years. Pension Participants may retire with unreduced accrued benefits at age 65 with five years of employment or when the total of age and years of service equals 80 (Rule of 80). The monthly benefit at retirement for Pension Participants is payable in a 10-year certain and life thereafter form of annuity. There are no automatic or guaranteed post-retirement cost-of-living adjustments, but ad hoc retiree benefit increases may be granted by amendment. Pension Participants are not required to contribute to the Plan, although the Plan retains employee contributions and associated liabilities from years prior to April 1, 1984, when the Plan required employee contributions. LCRA pays early retirement disability benefits to participants if the participant becomes disabled prior to reaching their normal retirement date under the Plan. LCRA pays death benefits to the beneficiaries of Plan participants based on the Plan participant's elections made.

All employees initially employed or reemployed by LCRA on or after Jan. 1, 2002, and before May 1, 2012, who complete three consecutive months of credited service are eligible to participate in the Plan as a Cash Balance Participant as of the monthly anniversary date coinciding with or first following the completion of three consecutive months of credited service. The cash balance account consists of a beginning balance, monthly contribution credits and monthly interest credits. The beginning balance should be zero unless the Cash Balance Participant was employed prior to Jan. 1, 2002, in which case the beginning balance should be the Plan's lump-sum value, if any, as of Dec. 31, 2001, or, if greater, the transition value determined as of Dec. 31, 2001. The transition value was based on credited service and compensation averaged over 60 months of employment, determined as of Dec. 31, 2001. Contribution credits are equal to 4% of compensation paid during a month.

Interest credits are added at the end of each month to the cash balance account based on an annual effective interest rate of 7%.

Funding Policy: The LCRA Board of Directors amended the Plan at its March 21, 2012, meeting to close it to new entrants effective May 1, 2012. Given the closing of the Plan to new entrants, the Plan's actuaries recommended a new funding policy beginning with the fiscal year ended March 31, 2013. The LCRA Board of Directors has sole authority to determine the employer's contribution, taking into consideration the actuaries' recommended contribution.

In order for a public employee retirement plan to have an adequate contribution arrangement, contributions must be sufficient to pay the Plan's normal cost and to amortize the Plan's total net pension liability (NPL) over a reasonable period of time. Based on the professional judgment of the Plan's actuaries and the actuarial assumptions and methods used in the April 1, 2012, valuation, the actuaries recommended the amortization period for the Plan be 25 years beginning April 1, 2012. Given the closed group of employee participants, the actuaries believed the amortization of the NPL should switch from a level percent of participant payroll contributions to level dollar contributions, and the Board approved the recommendation.

Based on this funding policy, the actuaries' recommended contributions for the years ended Dec. 31, 2019, and Dec. 31, 2018, were $23.7 million and $20.4 million, respectively, to be paid biweekly during the Plan years. This amount will fund the Plan's normal cost for the year and will amortize the NPL as a level dollar amount over the remaining 18 years for 2019 and 19 years for 2018. There are no required contributions by the participants; however, some employee contributions are made to purchase optional credited service. The actual employer contributions for the years ended Dec. 31, 2019, and Dec. 31, 2018, were approximately $24.4 million and $23.9 million, respectively.

The funding policy also depends on the total return of the Plan's assets, which varies from year to year. Investment policy decisions are established and maintained by the Board. The Board employs and selects investment managers with the advice of its investment consultant, who is completely independent of the investment managers. The money-weighted rate of return on pension plan investments was 17.6% for the year ended Dec. 31, 2019, and -6.4% for the year ended Dec. 31, 2018. This measurement of the investment performance is net of investment-related expenses, reflecting the effect of the contributions received and the benefits paid during the period.

Employees Covered by the Plan:

Category	Dec 31, 2019	Dec 31, 2018
Retirees and beneficiaries currently receiving benefits	962	922
Inactive employees entitled to but not yet receiving benefits	87	91
Active employees	953	1,049
Total	2,002	2,062

Pension Benefits: The Plan provides pension, disability and death benefits. Employees who are 100% vested are entitled to pension benefits beginning at the normal retirement date, which is the first day of the month that follows the earlier of (a) the later of (i) the participant's 65th birthday or (ii) the date on which the participant completes five years of credited service or (b) the date on which the participant's age and service, computed in years and months, is equal to 80 years. The amount payable to participants is equal to the amount of the participant's accrued benefit, with previously defined limitations, as defined in the Plan.

Optional forms of distribution were made available to each individual or beneficiary entitled to a retirement benefit in pay status as of Jan. 1, 2002. Each individual or beneficiary was offered a one-time election of a lump-sum distribution representing either 100% or 50% of the present value of such individual's vested accrued retirement benefit determined as of Jan. 1, 2002. Individuals who elected a 50% lump-sum distribution received the remaining 50% of the present value of such individual's vested accrued retirement benefit as a monthly retirement benefit. Vested individuals, whose employment with LCRA terminated prior to Jan. 1, 2002, had a one-time election to receive 100% of the present value of such individual's vested accrued retirement benefit determined as of Jan. 1, 2002.

Option A: Under Option A, LCRA pays 100% of the pension cost and matches 25% of the first 4% of pay an employee contributes to LCRA's 401(k) Plan. Employees under this option may retire with their unreduced accrued benefits at age 65 with five years of participation, or when the total of their age and service equals 80, effective July 1, 1994. Effective July 1, 1995, an employee who is fully vested, may purchase additional service credits subject to certain limitations. The normal form of monthly benefit at retirement is payable in a 10-year certain and life thereafter form of an annuity. There are other actuarially equivalent monthly payment forms available. Lump-sum payment values also are available as a form of payment. This option closed to new participants as of Jan. 1, 2002.

The retirement benefit for each year of service is 1.75% of the highest five-year average monthly compensation plus 0.4% of that portion of the highest five-year average monthly compensation, which exceeds the monthly integration level. The monthly integration level is a sliding scale based upon the calendar year in which termination of employment occurs, with the level being $3,300 for those terminating employment in 2020 and later.

Option B: This option differs from Option A by establishing an account for each employee. The account is for recordkeeping purposes only and does not represent a statement of interest of the participant in actual assets of the Plan. The value of the participant's account is adjusted by increasing the balance by 4% of the participant's compensation paid during that month. The account will earn a 7% fixed rate in interest each year. This option also offers an enhanced 401(k) match. LCRA matches 100% of the first 4% of pay an employee contributes to the 401(k) account. LCRA matches 50% of the next 2% of pay contributed to the account. The normal retirement benefit for an employee provided under this option who has reached a normal retirement date shall be a single lump-sum payment equal to the participant's accrued retirement benefit (i.e., the participant's account balance). The participant may elect an optional form of payment of retirement benefits, as provided by the Plan. This option closed to new participants on May 1, 2012.

Administrative Expenses: Administrative expenses are paid by the Plan, as provided by the Plan document. Certain expenses incurred in connection with the general administration of the Plan and paid by the Plan are recorded as deductions in the accompanying statements of changes in fiduciary net position. In addition, certain investment-related expenses are included in the net appreciation of fair value of investments presented in the accompanying statements of changes in fiduciary net position.

2. Summary of Significant Accounting Policies

Reporting Entity: LCRA sponsors the Plan. The Plan does not purport to present, and does not present, the financial position or changes in financial position of LCRA as of any date or for any period. Certain information regarding the Plan is included in the notes to LCRA's financial statements.

Use of Estimates: The financial statements have been prepared in conformity with generally accepted accounting principles in the United States of America (GAAP). GAAP requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities and changes therein; disclosures of contingent assets and liabilities; the actuarial present value of accumulated plan benefits at the date of the financial statements; and changes therein. Actual results could differ from those estimates.

Risk: The Plan invests in different types of investments, which are exposed to various risks that have the potential to result in losses. These risks are custodial credit risk, credit risk, concentration of credit risk, interest rate risk and foreign currency risk. Each risk is described in detail on the following pages. Due to the level of risk associated with certain investments, it is at least reasonably possible that changes in the fair values of investments will occur in the near term and that such changes could materially affect participants' account balances and the amounts reported in the statements of net position.

Basis of Accounting: The financial statements of the Plan are reported using the economic resources measurement focus and are prepared on the accrual basis of accounting in conformity with GAAP. Revenues are recorded when earned, and expenses are recorded when a liability is incurred, regardless of the timing of the related cash flows. The Plan applies all applicable Governmental Accounting Standards Board (GASB) pronouncements and presents its financial statements in accordance with the GASB Codification of Governmental Accounting and Financial Reporting Standards.

Cash and Cash Equivalents: Cash and cash equivalents include money market and interest-bearing investments. The Plan considers all highly liquid investments with an original maturity of three months or less at the date of purchase to be cash equivalents.

Investment Valuation and Income Recognition: GASB Statement No. 72, *Fair Value Measurement and Application* (Statement No. 72) addresses the accounting and reporting issues related to fair value measurements.

Fair value is the price that would be received to sell an asset in an orderly transaction between market participants. Investments are reported at fair value based on quoted market prices, or when quoted market prices are not readily determinable, estimated fair values using observable inputs, including quoted prices for similar securities, interest rates and a fixed income pricing model that uses available market rates. For investments in limited partnerships where no readily determinable fair value exists, the fair value of the investment is based on the net asset value per share calculated as the most recent capital account balance of each limited partnership as communicated by the investment administrator, adjusted for subsequent contributions, distributions and withdrawals, and adjusted as necessary by the Plan for current market conditions. Shares of registered investment companies (mutual funds) are reported at net asset value.

The Plan uses various methods to measure the fair value of investments on a recurring basis. Statement No. 72 establishes a hierarchy that prioritizes inputs to valuation methods. The three levels of inputs are:

Level 1 – Unadjusted quoted prices in active markets for identical assets and liabilities that the Plan has the ability to access.

Level 2 – Observable inputs other than quoted prices included in Level 1 that are observable for the asset or liability, either directly or indirectly. These inputs may include quoted prices for the identical instrument in an inactive market, prices for similar instruments, interest rates, prepayment speeds, credit risks, yield curves, default rates and similar data.

Level 3 – Unobservable inputs for the asset or liability, to the extent relevant observable inputs are not available, representing the Plan's own assumptions about the assumptions a market participant would use in valuing the asset or liability, and would be based on the best information available.

The availability of observable inputs can vary from security to security and is affected by a wide variety of factors, including for example, the type of security, whether the security is new and not yet established in the marketplace, the liquidity of markets, and other characteristics particular to the security. To the extent valuation is based on models or inputs less observable or unobservable in the market, the determination of fair value requires more judgment. Accordingly, the degree of judgment exercised in determining fair value is greatest for instruments categorized in Level 3.

The inputs used to measure fair value may fall into different levels of the fair value hierarchy. In such cases, for disclosure purposes, the level in the fair value hierarchy in which the fair value measurement falls is determined based on the lowest level input significant to the fair value measurement in its entirety.

Investments measured at net asset value do not have significant terms or conditions for redemption or commitment for additional funding.

The inputs or methodology used for valuing securities are not necessarily an indication of the risk associated with investing in those securities. U.S. Treasury securities, agency securities, corporate bonds and other asset-backed securities are valued at the recent closing price reported on the market in which individual securities are traded on the last day of the Plan's year (level 2). Mutual funds, limited partnerships and real estate investment trusts are valued using net asset value. Equity securities are valued at market prices as reported for the last day of the Plan year (level 1).

Purchases and sales of securities are recorded on a trade-date basis. Interest income is recorded on the accrual basis. Dividends are recorded on the ex-dividend date. Net appreciation includes the Plan's gains and losses on investments bought and sold, as well as unrealized gains and losses on investments held at year-end.

Payment of Benefits: Benefit payments to participants are recorded when due and payable under terms of the Plan.

3. Net Pension Liability

The employer's net pension liability was measured as of Dec. 31, 2019, and Dec. 31, 2018, and the total pension liability used to calculate the net pension liability was determined by an actuarial valuation as of Jan. 1, 2020, and Jan. 1, 2019.

Actuarial Assumptions: The total pension liability in the Dec. 31, 2019, and Dec. 31, 2018, actuarial valuations were determined using the following actuarial assumptions applied to all periods included in the measurement:

Actuarial Assumptions	Dec. 31, 2019	Dec. 31, 2018
Inflation	2.50%	2.75%
Salary increases	3.25% plus merit and promotion increases that vary by age and service	3.25% plus merit and promotion increases that vary by age and service
Investment rate of return	7.00% net of pension plan investment expense, including inflation	7.25% net of pension plan investment expense, including inflation

For the both the 2018 and 2019 Plan years, mortality rates were based on the PubG-2010(A) with general projection using Scale MP-2018. For both Plan years, the assumed retirement rates, termination rates, and rates of merit and promotion increases were based on an experience study over the five Plan years ending in 2015.

The long-term expected rate of return on pension plan investments is reviewed annually and is determined using a building-block method in which expected future net real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These components are combined to produce the long-term expected rate of return by weighting the expected future net real rates of return by the target asset allocation percentage and adding expected inflation. The final 7.00% assumption for the year ended Dec. 31, 2019, and 7.25% for the year ended Dec. 31, 2018, was selected by rounding down.

The target allocation and expected arithmetic net real rates of return for each major asset class are summarized in the following table for the year ended Dec. 31, 2019, and the year ended Dec. 31, 2018.

Asset Class	Target Allocation	Dec. 31, 2019 Long-Term Expected Net Real Rate of Return
Domestic equity		
Large cap	24.3%	6.4%
Small cap	6.2%	6.0%
International equity		
Developed	23.8%	6.3%
Emerging	4.9%	7.2%
Fixed income		
Core	19.9%	1.7%
Alternatives		
Long/short equity	10.4%	4.2%
Absolute return	8.0%	1.7%
Cash	2.5%	35.0%
Total	100.0%	
Weighted average		4.7%

Asset Class	Target Allocation	Dec. 31, 2018 Long-Term Expected Net Real Rate of Return
Domestic equity		
Large cap	22.0%	6.4%
Small cap	5.5%	6.0%
International equity		
Developed	20.0%	6.4%
Emerging	7.5%	7.7%
Fixed income		
Core	15.0%	1.7%
Global	5.0%	1.9%
Alternatives		
Long/short equity	15.0%	3.6%
Absolute return	10.0%	1.6%
Total	100.0%	
Weighted average		4.6%

Discount Rate: The discount rate used to measure the total pension liability as of Jan. 1, 2020, was 7.00%, and Jan. 1, 2019, was 7.25%. No projection of cash flows was used to determine the discount rate because the Jan. 1, 2020, and Jan. 1, 2019, actuarial valuation showed expected contributions would pay the normal cost and amortize net pension liability in 18 and 19 years, respectively. Because of the 20-year amortization period with level dollar amortization of net pension liability, the pension plan's fiduciary net position is expected to be available to make all projected future benefit payments of current active and inactive members. Therefore, the long-term expected rate of return on pension plan investments of 7.00% was applied to all periods of projected payments as the discount rate to determine the total pension liability.

Sensitivity of the Net Pension Liability to Changes in the Discount Rate: The following presents the net pension liability of the employer as of Dec. 31, 2019, and Dec. 31, 2018, calculated using the discount rate of 7.00% for the year ended Dec. 31, 2019, and 7.25%, for the year ended Dec. 31, 2018, as well as what the employer's net pension liability would be if it were calculated using a discount rate 1% lower (6.00% in 2019, and 6.25% in 2018) or 1% higher (8.00% in 2019, and 8.25% in 2018) than the current rate.

Net Pension Liability
(Dollars in thousands)

Dec. 31, 2019	1% Decrease (6.00%)	Current Discount Rate (7.00%)	1% Increase (8.00%)
Employer's net pension liability	$ 273,197	$ 207,600	$ 151,647

Dec. 31, 2018	1% Decrease (6.25%)	Current Discount Rate (7.25%)	1% Increase (8.25%)
Employer's net pension liability	$ 295,615	$ 232,267	$ 178,240

4. Investments

The Plan's investments are held in a trust and managed by independent investment managers, investment consultants and the Board. Investment guidelines historically have been established by the Board and then used to measure and manage performance. They are included in the Plan's written master statement, which is periodically reviewed by the Board and may be amended by the Board.

The primary goal of the Plan is to provide participants and their beneficiaries with retirement benefits according to provisions of the Plan. The Plan's assets must be invested with the care, skill and diligence a prudent expert acting in this capacity would undertake. The overall investment objective of the Plan is to invest the funds in such a manner as to achieve a reasonable growth of the corpus while maintaining a consistent payout capability. This should be achieved within the framework of the master statement consistent with the Plan's general objective of safety and preservation of principal. The minimum expected total return is the actuarial assumption approved by the Board on an annualized basis. The actuarial rate of return is a figure that should be net of expenses. This objective should be pursued as a long-term goal designed to maximize the benefits available without exposure to undue risk.

The annual total return objective should be greater than the actuarial assumption, and the investments of the total Plan (as defined as the market value by the annual audit report) should produce a total return equal to or greater than the custom index. The custom index is defined as an index designed to match the asset allocation of the Plan by replacing each asset class with the corresponding percentage of index returns.

Investment managers are granted discretionary authority to manage assets of the Plan for the Board. Among other things, this master statement establishes policies regarding the current asset allocation strategies of the Plan and the duties and obligations of investment managers. Investment managers must manage the Plan assets according to the investment philosophy as presented to the Board when hired. No deviation from stated philosophy is authorized unless first discussed with the Board and its independent investment adviser, and the prior written consent of the Board in each instance is obtained.

The Board expects the total portfolio to achieve the following objectives over a five-year rolling average: (1) an annual total return greater than the actuarial assumption (currently 7.00%) and (2) investments of the Plan should produce a total return equal to or greater than the custom index.

For Dec. 31, 2019, the Plan asset allocation is targeted to be: 24.3% large cap domestic equities, 6.2% small cap domestic equities, 23.8% developed, 4.9% emerging, 19.9% core, 10.4% defensive equity, 8.0% absolute return and 2.5% cash.

For Dec. 31, 2018, the Plan asset allocation is targeted to be: 22.0% large cap domestic equities, 5.5% small cap domestic equities, 15.0% long/short equity, 27.5% international equities, 15.0% domestic fixed income, 10.0% absolute return and 5.0% global fixed income.

These guidelines shall be reviewed periodically and can be changed by the Board at any time. The investment managers will be notified of any changes and will have a maximum of 30 days to comply.

Investments as of Dec. 31, 2019, are as follows:

LCRA Retirement Plan and Trust Investments
(Dollars in thousands)

	Dec. 31, 2019			
Investments	Level 1	Level 2	Level 3	Total Amount
Fixed income securities				
United States Treasury and agency:				
Mortgage pass-through securities	$ -	$ 22,826	$ -	$ 22,826
Notes and bonds	-	23,209	-	23,209
Corporate bonds	-	32,923	-	32,923
Other asset-backed securities	-	4,723	-	4,723
Total fixed income securities	-	83,681	-	83,681
Equity securities	10,820	-	-	10,820
Total equity securities	10,820	-	-	10,820
Investments measured at net asset value				
Limited partnerships				45,262
Mutual funds				276,542
Real estate investment trust				895
Total investments measured at net asset value				322,699
Total investments				$ 417,200

Investments measured at net asset value as of Dec. 31, 2019, are as follows:

Investments Measured at Net Asset Value
(Dollars in thousands)

Investments Measured at Net Asset Value	Equities	Fixed Income	Net Asset Value	Unfunded Commitments	Redemption Frequency (if currently eligible)	Redemption Notice Period
Limited partnerships						
Rimrock High Income Plus Fund, Ltd [4]	$	$	$ 22,180	$ -	Quarterly	120 days
Arrowgrass International Fund Ltd [4]			12,706	-	Quarterly	45 days [5]
Senator Global Opportunity Offshore Fund II Series 49 [3]			10,376	-	Quarterly	60 days
Total limited partnerships			45,262	-		
Mutual funds						
SSgA S&P 500 Flagship NL Fund [1]	104,696	-	104,696	-	Daily	2 days
Pyrford International Trust [2]	50,515	-	50,515	-	Monthly	N/A
Invesco International Growth [2]	51,904	-	51,904	-	Daily	N/A
Parametric Defensive Equity LLC [3]	21,927	-	21,927	-	Monthly	5 days
GQG Partners Emerging Markets Equity [2]	21,019	-	21,019	-	Weekly	3 days
Ranger Small Cap Fund [1]	14,266	-	14,266	-	Monthly	2 days
Senator Global Opportunity Offshore Fund II Class A1 Series 1 [3]	12,215	-	12,215	-	Quarterly	60 days
Total mutual funds	276,542	-	276,542	-		
Real estate investment trust			895	-		
Total investments measured at net asset value			$ 322,699	$ -		

[1] Domestic equity managers invest in U.S.-based companies utilizing bottom-up stock selection and quantitative screening. With the exception of the SSgA S&P 500 Flaship NL Fund, which seeks to track its index, the other managers seek to outperform their respective indices over a long-term investment horizon.

[2] International equity managers invest in internationally based companies utilizing bottom-up stock selection and seek to outperform their respective indices over a long-term investment horizon.

[3] Long/short equity managers invest in both U.S. and internationally based companies and may also utilize short stocks or bonds. Highline, Hoplite and Parametric focus solely on equities, while Senator may invest in either equities or debt. Bottom-up security selection drives the investment process, and each manager seeks to outperform their respective indices over a long-term investment horizon.

[4] Absolute return managers invest in a broader set of debt securities than fixed income managers and pursue incremental positive returns in all market environments. These managers actively manage their portfolios and expect to outperform their respective benchmarks over a long-term investment horizon.

[5] A hard lockup does not permit an investor to request a capital redemption until after the lockup date passes for Arrowgrass, which expires April 2019.

Investments as of Dec. 31, 2018, are as follows:

LCRA Retirement Plan and Trust Investments
(Dollars in thousands)

	Dec. 31, 2018			
Investments	Level 1	Level 2	Level 3	Total Amount
Fixed income securities				
United States Treasury and agency:				
Mortgage pass-through securities	$ -	$ 23,221	$ -	$ 23,221
Notes and bonds	-	16,434	-	16,434
Corporate bonds	-	26,865	-	26,865
Other asset-backed securities	-	5,642	-	5,642
Total fixed income securities	-	72,162	-	72,162
Equity securities	8,798	-	-	8,798
Total equity securities	8,798	-	-	8,798
Investments measured at net asset value				
Limited partnerships				89,071
Mutual funds				208,053
Real estate investment trust				752
Total investments measured at net asset value				297,876
Total investments				$ 378,836

Investments measured at net asset value as of Dec. 31, 2018, are as follows:

Investments Measured at Net Asset Value
(Dollars in thousands)

Investments Measured at Net Asset Value	Equities	Fixed Income	Net Asset Value	Unfunded Commitments	Redemption Frequency (if currently eligible)	Redemption Notice Period
Limited partnerships						
Rimrock High Income Plus Fund, Ltd [4]	$	$	$ 22,442	$ -	Quarterly	120 days
Arrowgrass International Fund Ltd [4]			20,905	-	Quarterly	45 days [5]
Hoplite Offshore Fund, Ltd. [3]			19,567	-	Quarterly	45 days
Highline Capital Partners QP, LP [3]			17,545	-	Quarterly	30 days
Senator Global Opportunity Offshore Fund II Series 49 [3]			8,612	-	Quarterly	60 days
Total limited partnerships			89,071	-		
Mutual funds						
SSgA S&P 500 Flagship NL Fund [1]	80,929	-	80,929	-	Daily	2 days
Pyrford International Trust [2]	41,313	-	41,313	-	Monthly	N/A
Invesco International Growth [2]	36,836	-	36,836	-	Daily	N/A
GQG Partners Emerging Markets Equity [2]	17,200	-	17,200	-	Weekly	3 days
Ranger Small Cap Fund [1]	10,999	-	10,999	-	Monthly	2 days
Parametric Defensive Equity LLC [3]	10,530		10,530		Monthly	5 days
Senator Global Opportunity Offshore Fund II Class A1 Series 1 [3]	10,246	-	10,246	-	Quarterly	60 days
Total mutual funds	208,053	-	208,053	-		
Real estate investment trust			752	-		
Total investments measured at net asset value			$ 297,876	$ -		

[1] Domestic Equity Managers invest in U.S.-based companies utilizing bottom-up stock selection and quantitative screening. With the exception of the SSgA S&P 500 Flaship NL Fund which seeks to track its index, the other managers seek to outperform their respective indices over a long term investment horizon.

[2] International Equity Managers invest in internationally-based companies utilizing bottom-up stock selection and seek to outperform their respective indices over a long term investment horizon.

[3] Long/Short Equity Managers invest in both U.S. and internationally-based companies and may also short stocks or bonds. Highline, Hoplite, and Parametric focus solely on equities, while Senator may invest in either equities or debt. Bottom-up security selection drives the investment process, and each manager seeks to outperform their respective indices over a long term investment horizon.

[4] Absolute Return Managers invest in a broader set of debt securities than Fixed Income Managers and pursue incremental positive returns in all market environments. These managers actively manage their portfolios and expect to outperform their respective benchmarks over a long term investment horizon.

[5] A hard lockup does not permit an investor to request for a capital redemption until after the lockup date passes for Arrowgrass, the lockup expires April 2019. In the case of Senator, the hard lockup expires in October 2018.

Interest Rate Risk: Interest rate risk is the risk that changes in interest rates will adversely affect the fair value of investments. The Plan's master statement has no official policy for the management of interest rate risk.

The following tables address interest rate risk exposure by investment type using the effective duration method.

Investment Maturities
(Dollars in thousands)

Investment Type	Fair Value	Less Than One Year	One to Six Years	Six to 10 Years	Greater Than 10 Years
	Dec. 31, 2019				
United States Treasury and agency:					
Notes and bonds	$ 22,608	$ -	$ 13,683	$ 2,630	$ 6,295
Mortgage pass-through securities	22,826	-	-	58	22,768
Commercial mortgage-backed securities	1,548	-	-	-	1,548
Asset-backed securities	3,174	-	2,844	175	155
Corporate bonds	29,625	1,174	13,976	8,178	6,297
Yankee bonds	3,900	-	2,806	792	302
Total fixed income securities	$ 83,681	$ 1,174	$ 33,309	$ 11,833	$ 37,365

Investment Maturities
(Dollars in thousands)

Investment Type	Fair Value	Less Than One Year	One to Six Years	Six to 10 Years	Greater Than 10 Years
	Dec. 31, 2018				
United States Treasury and agency:					
Notes and bonds	$ 16,434	$ 654	$ 9,045	$ 1,169	$ 5,566
Mortgage pass-through securities	23,221	-	-	74	23,147
Commercial mortgage-backed securities	938	-	-	-	938
Asset-backed securities	4,275	-	3,803	472	-
Corporate bonds	26,865	2,524	11,814	7,783	4,744
Yankee bonds	429	-	429	-	-
Total fixed income securities	$ 72,162	$ 3,178	$ 25,091	$ 9,498	$ 34,395

Credit Risk: Credit risk is the risk an issuer or other counterparty to an investment will not fulfill its obligation. The Plan's master statement restricts the bond portfolio to a minimum average quality credit rating of AA by Standard & Poor's (S&P) (or AA2 by Moody's). A maximum of 20% (based on fair value) can be purchased or held in securities rated between BBB- (S&P) or BAA3 (Moody's) and BBB+ (S&P) or BAA1 (Moody's). At no time may the investment manager hold more than 3% of the fair value of the fixed income portfolio in securities that have fallen below BBB- (S&P) or BAA3 (Moody's). Commercial paper investments must not be rated lower than A-1 and P-1 by S&P and Moody's, respectively, with other short-term obligations rated at comparable credit quality. As of Dec. 31, 2019, and Dec. 31, 2018, the trust's lone fixed income manager, Barrow Hanley, held a portfolio-level credit rating of AA-/Aa3. The fixed income portfolio credit ratings are summarized in the exhibit below.

Fixed Income Portfolio Credit Ratings
(Dollars in thousands)

	Dec. 31, 2019		Dec. 31, 2018	
Credit Rating*	Fair Value	Allocation	Fair Value	Allocation
Aaa	$ 26,529	31.7%	$ 20,528	28.4%
Aa1 through Aa3	3,817	4.6%	2,953	4.1%
A1 through A3	15,012	17.9%	12,923	17.9%
Baa1 through Baa3	13,718	16.4%	10,345	14.3%
Unrated	24,605	29.4%	25,413	35.3%
Total fixed income securities	$ 83,681	100.0%	$ 72,162	100.0%

*Majority of securities rated by Moody's. Some may have been rated by other agencies.

Concentration of Credit Risk: Concentration of credit risk is defined as the risk of loss attributed to the magnitude of a government's investment in a single issuer. The Board employs and supervises an investment performance evaluation consultant to assist in the selection and evaluation of one or more investment managers, the establishment of investment objectives and guidelines, and the allocation of Plan assets among various assets.

The master statement defines risk in four categories of investment types: (1) domestic equities, (2) fixed income, (3) international equities and (4) alternative equities. The master statement states no investment manager may concentrate more than 5% of investments in any one issuer, except the United States government and agencies. The maximum exposure to American depository receipts is limited to 5% of each domestic equity manager portfolio. In addition, no manager may concentrate more than 30% of the assets under management, at market value, in any one sector. The following exhibit reflects the investments that have a greater than 5% concentration.

Investment Concentration of 5% or More
(Dollars in thousands)

	Dec. 31, 2019		
5% Issuer	Fair Value	Percentage of Fixed Income Investments	Policy Limit
Federal National Mortgage Association	$ 14,434	17.2%	N/A

	Dec. 31, 2018		
5% Issuer	Fair Value	Percentage of Fixed Income Investments	Policy Limit
Federal National Mortgage Association	$ 16,419	22.8%	N/A

The following table presents the fair value of equity investments representing 5% or more of the Plan's net position separately identified at Dec. 31, 2019, and Dec. 31, 2018:

Investments at 5% or More of Net Position
(Dollars in thousands)

Investment	Dec. 31, 2019	Dec. 31, 2018
SSgA S&P 500 Flagship NL Fund	$ 104,696	$ 80,929
Pyrford International Trust	50,515	41,313
Invesco International Growth	51,904	36,836
Rimrock High Income Plus Fund, Ltd	22,180	22,442
Parametric Defensive Equity LLC	21,927	10,530
GQG Partners Emerging Markets Equity	21,019	17,200
Ranger Small Cap Fund	14,266	10,999
Arrowgrass International Fund Ltd	12,706	20,905
Hoplite Offshore Fund, Ltd	-	19,567

Foreign Currency Risk: Foreign currency risk is the risk changing exchange rates will adversely affect the fair value of an investment. The Plan's master statement does not include an official policy for the management of foreign currency risk. It does, however, allow for hedging back to the U.S. dollars using forward foreign exchange contracts. Investment managers may hedge up to 100% of the foreign currency exposure of the portfolio. Commercial and investment banks used for hedging transactions must be rated A/A2 or better by S&P or Moody's, respectively. As of Dec. 31, 2019, and Dec. 31, 2018, the Plan had investments in mutual funds with exposure to foreign currency risk of $106.0 million and $84.9 million, respectively. The funds that compose the foreign currency risk totals are the Invesco International Growth, GQG Partners Emerging Markets Equity, Pyrford International Trust, various equities and fixed income securities held in the custodial account; however, the U.S. investments were removed from the exhibit and the totals below will not match the sum of the fund balances presented elsewhere in the financial statements.

Currency by Investment and Fair Value
U.S. dollars in thousands)

Investments	Dec. 31, 2019	Dec. 31, 2018
Euro	$ 28,601	$ 20,470
Great Britain, Pound Sterling	11,481	8,874
Japan, Yen	10,973	7,384
Switzerland, Franc	10,375	8,968
Hong Kong, Dollar	8,786	6,878
Australia, Dollar	6,397	5,813
Canada, Dollar	4,090	3,455
Singapore, Dollar	3,878	2,819
Taiwan, Dollar	3,463	2,911
India, Rupee	3,201	1,868
Sweden, Krona	2,760	3,011
China, Yuan	2,588	1,885
Korea (South), Won	2,045	2,479
Brazil, Real	1,493	1,325
Indonesia, Rupiah	1,408	1,343
Malaysia, Ringgit	1,390	1,365
Thailand, Baht	471	1,041
Other	2,599	3,014
Total investment fair value	$ 105,999	$ 84,903

Money-Weighted Rate of Return: For the year ended Dec. 31, 2019, and the year ended Dec. 31, 2018, the annual money-weighted rates of return on pension plan investments were 17.6% and -6.4%, respectively. The money-weighted rates of return express investment performance, net of investment expenses, adjusted for the changing amount actually invested.

Custodial Credit Risk Investment Risk: Custodial credit risk investment risk is the risk that in the event of the failure of the counterparty, the entity will not be able to recover the value of its investments or collateral securities in the possession of the outside party. Investment securities are exposed to custodial credit risk if the securities are uninsured, are not registered in the entity's name and are held by a counterparty. The Plan has custodial accounts registered in the name of the Plan with discretion over those accounts. These investments are uninsured. The total fixed income securities as of Dec. 31, 2019, and Dec. 31, 2018, was $83.7 million and $72.2 million, respectively. The total amount of equity securities as of Dec. 31, 2019, and Dec. 31, 2018, was $10.8 million and $8.8 million, respectively. The Plan investment policy includes targets that limit the amount of equity securities and as a result manages the risk.

5. Tax Status

The Plan obtained its latest determination letter dated Feb. 27, 2015, in which the Internal Revenue Service stated the Plan and related trust, as then designed, were in compliance with the applicable requirements of the Internal Revenue Code and, therefore, not subject to tax. The Plan is not subject to the provisions of the Employee Retirement Income Security Act of 1974.

6. Risks and Uncertainties

Plan contributions are made, and the actuarial present value of accumulated Plan benefits are reported based on certain assumptions pertaining to interest rates, inflation rates and employee demographics, all of which are subject to change. Due to uncertainties inherent in the estimations and assumptions process, it is reasonably possible changes in these estimates and assumptions in the near term would be material to the financial statements.

7. Subsequent Events

The Plan has evaluated subsequent events through June 5, 2020, the date the financial statements were available to be issued, and there were no subsequent events to be disclosed.

Required Supplementary Information

LOWER COLORADO RIVER AUTHORITY RETIREMENT PLAN AND TRUST
SCHEDULE OF EMPLOYER CONTRIBUTIONS
As of and for the Years and Periods Ended March 31, 2015, through Dec. 31, 2019

A. Schedule of Changes in Employer's Net Pension Liability and Related Ratios for the Last 10 Plan Years [1]
(Dollars in thousands)

	Plan Year Ending Dec. 31, 2019	Plan Year Ending Dec. 31, 2018	Plan Year Ending Dec. 31, 2017	Nine Months Ending Dec. 31, 2016 [3]	Plan Year Ending March 31, 2016	Plan Year Ending March 31, 2015	Plan Year Ending March 31, 2014
1. Total pension liability							
a. Service cost	$ 5,581	$ 5,767	$ 6,132	$ 4,957	$ 6,446	$ 7,154	$ 7,161
b. Interest cost	43,449	41,127	40,899	30,129	38,136	37,738	37,177
c. Purchase of optional credited service	249	325	238	620	1,231	373	1,214
d. Difference between expected and actual experience	1,186	1,671	985	7,648	4,585	(6,402)	-
e. Changes in assumptions	15,004	22,823	-	12,369	21,020	-	-
f. Benefit paid to participants	(42,896)	(39,713)	(44,837)	(27,476)	(38,088)	(32,881)	(43,798)
g. Plan amendments	-	-	-	-	130	219	-
h. Net change in total pension liability	22,573	32,000	3,417	28,247	33,460	6,201	1,754
i. Total pension liability, beginning of period	614,905	582,905	579,488	551,241	517,781	511,580 #	509,826
j. Total pension liability, end of period	637,478	614,905	582,905	579,488	551,241	517,781	511,580
2. Plan fiduciary net position							
a. Contributions by employer	24,446	23,893	22,892	15,099	21,063	27,496	31,210
b. Contributions by participants	249	325	238	620	1,231	373	1,214
c. Net investment income	65,696	(26,588)	43,708	14,851	815	22,901	39,848
d. Benefit paid to participants	(42,896)	(39,713)	(44,837)	(27,476)	(38,088)	(32,881)	(43,798)
e. Administrative and other expenses	(255)	(84)	(316)	(9)	(4)	(319)	(238)
f. Net change in plan fiduciary net position	47,240	(42,167)	21,685	3,085	(14,983)	17,570	28,236
g. Plan fiduciary net position, beginning of period	382,638	424,805	403,120	400,035	415,018	397,448	369,212
h. Plan fiduciary net position, end of period	$ 429,878	$ 382,638	$ 424,805	$ 403,120	$ 400,035	$ 415,018	$ 397,448
3. Employer's net pension liability [Items 1(j)-2(h)]	$ 207,600	$ 232,267	$ 158,100	$ 176,368	$ 151,206	$ 102,763	$ 114,132
4. Plan fiduciary net position as a percentage of total pension	67.4%	62.2%	72.9%	69.6%	72.6%	80.2%	77.7%
5. Covered payroll	$ 104,489	$ 108,601	$ 112,700	$ 91,427	$ 122,108	$ 127,029	$ 123,227
6. Employer's net pension liability as a percentage of covered	198.7%	213.9%	140.3%	192.9%	123.8%	80.9%	92.6%

Notes to Schedule:

1 This schedule is presented to illustrate the requirement to show information for 10 years. However, until a full 10-year trend is compiled, only available information is

2 Determined from the ending total pension liability using the rollback procedure allowed for the initial year of implementing GASB 67.

3 The plan year has been changed to end as of Dec. 31 of 2016 and all future years. This change was done to allow for more efficient year-end required reporting that is

B. Schedule of Employer Contributions for the Last 10 Plan Years [1]
(Dollars in thousands)

	Plan Year Ending Dec. 31, 2019	Plan Year Ending Dec. 31, 2018	Plan Year Ending Dec. 31, 2017	Nine Months Ending Dec. 31, 2016	Plan Year Ending Mar. 31, 2016	Plan Year Ending Mar. 31, 2015	Plan Year Ending Mar. 31, 2014
1. Actuarially determined contribution	$ 20,436	$ 20,451	$ 18,580	$ 13,935	$ 16,969	$ 19,307	$ 20,892
2. Contributions in relation to the actuarially determined contribution	24,446	23,893	22,892	15,099	21,063	27,496	31,210
3. Contribution deficiency (excess)	$ (4,010)	$ (3,442)	$ (4,312)	$ (1,164)	$ (4,094)	$ (8,189)	$ (10,318)
4. Covered payroll	$ 104,489	$ 108,601	$ 112,700	$ 91,427	$ 122,108	$ 127,029	$ 123,227
5. Contribution as a percentage of covered payroll	23.4%	22.0%	20.3%	16.5%	17.2%	21.6%	25.3%

[1] This schedule is presented to illustrate the requirement to show information for 10 years. However, until a full 10-year trend is compiled, only available information is shown. Amounts recognized in the Plan year represent changes between the current and prior measurement dates.

Notes to Schedule above: Actuarially determined contribution (ADC) for each plan year was calculated in the actuarial valuation at the beginning of the year through the plan year ending 12/31/2016. The ADC for the plan year ending 12/31/2017 was based on the actuarial valuation as of 4/1/2016. The ADC for the plan year ending 12/31/2018 was based on the actuarial valuation as of 1/1/2017. The ADC for the plan year ending 12/31/2019 was based on the actuarial valuation as of 1/1/2018. Methods and assumptions used to determine the ADCs:

Actuarial cost method	Entry age
Amortization method	Level amount, closed period
Remaining amortization period	18, 19, 20 and 21 years, respectively, for years ending 12/31 in 2019, 2018, 2017 and 2016; 22, 23 and 24 years, respectively, for years ending 3/31 in 2016, 2015, and 2014
Asset valuation method	5-year smoothed market
Inflation	2.75% for year ending 12/31/2019; 2.75% for year ending 12/31 in 2018; 3% for years ending 12/31 in 2017 and 2016; 3.25% for years ending 3/31 in 2016, 2015, and 2014
Salary increases	General wage increase plus merit and promotion increases that vary by age and service; general wage increase of 3.25% for year ending 12/31/2019, 3.25% for year ending 12/31 in 2018, 3.5% for years ending 12/31 in 2017 and 2016, and 4.00% for years ending 3/31 in 2016, 2015, and 2014
Investment rate of return	7.25% for year ending 12/31/2019; 7.25% for years ending 12/31 in 2018, 2017 and 2016; 7.50%, net of pension plan investment expense, for years ending 3/31 in 2016, 2015, and 2014
Retirement age	Rates that vary by age and service
Mortality	RP-2000 Combined Healthy Mortality Table for males and for females (sex distinct) projected to 2024 by scale AA for years ending 12/31 in 2019, 2018, 2017 and 2016 and projected to 2018 by scale AA for years ending 3/31 in 2016, 2015, and 2014

Plan Year Ending	Annual Money-Weighted Net Rate of Return [2]
Dec. 31, 2019	17.6%
Dec. 31, 2018	-6.4%
Dec. 31, 2017	11.1%
Dec. 31, 2016 [3]	3.8%
March 31, 2016	0.2%
March 31, 2015	5.8%
March 31, 2014	11.0%

[1] Until a full 10-year trend is compiled, only available information is shown.

[2] The money-weighted average rate of return expresses investment performance, net of investment expenses, reflecting the estimated effect of the contributions received and the benefits paid during the year.

[3] This is the rate of return for the short plan year of nine months, the transition year to the plan years ending Dec. 31.