



Delivered via e-mail

July 23, 2020

Mr. Stephen Kellicker
Senior Vice President, Finance
Lower Colorado River Authority
Post Office Box 220
Austin TX 78767

Re: Investment Program Review

Dear Mr. Kellicker:

Attached, please find the results of the investment program review conducted for the Lower Colorado River Authority Retirement Plan and Trust in satisfaction of the requirements stated in Texas Government Code Section 802.109 Investment Practices and Performance Reports.

This review was conducted on the investment program as it existed on December 31, 2019. In completing our report, we utilized three main tracks of data gathering and analysis: trustee and staff interviews, plan document review, and quantitative portfolio analysis. During our assessment, we focused on the following eight areas, as described in Section 10A of Article 6243g-4 of the Texas Civil Statutes:

- Policy compliance;
- Asset allocation;
- Portfolio structure;
- Investment manager due diligence and monitoring;
- Performance benchmarking;
- Fees and trading costs;
- Leverage and hedging; and
- Investment-related disclosures contained in the financial statements.

As a result of our review, we found the Lower Colorado River Authority Plan and Trust to have a reasonable and well-implemented investment strategy. Our research and findings support the contention that the Plan is well-managed with a clear and effective governance structure, a strong and ethical culture, well-established decision-making processes, and a simple and functional investment

strategy. Furthermore, we found no critical-path practices which we believe would imperil the health and solvency of the Plan.

Sincerely,

A handwritten signature in blue ink, appearing to read 'S. Whalen', is written over a horizontal blue line.

Scott J. Whalen, CFA, CAIA

Executive Managing Director and Senior Consultant



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JUNE 2020

Lower Colorado River Authority Retirement Plan and Trust

Investment Program Review

VERUSINVESTMENTS.COM

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Introduction and General Findings

Verus Advisory (“Verus”) was recently retained by the Board of Trustees of the Lower Colorado River Authority Plan and Trust (“the Plan”) to conduct an investment program review in satisfaction of the requirements stated in Texas Government Code Section 802.109 Investment Practices and Performance Reports.

Verus is an institutional investment consulting firm acting as an independent reviewer of the Plan’s overall investment program. We conducted a thorough programmatic review, utilizing the aggregate experience of a team of investment professionals assigned to this project. We are not an audit firm and did not conduct our work from that perspective. Rather, we are an investment advisory firm with decades of experience implementing leading practice investment solutions for our institutional investor clients. We drew on that experience to form opinions and judgments about the Plan’s investment program in the following eight areas, as described in Section 10A of Article 6243g-4 of the Texas Civil Statutes:

- Policy compliance;
- Asset allocation;
- Portfolio structure;
- Investment manager due diligence and monitoring;
- Performance benchmarking;
- Fees and trading costs;
- Leverage and hedging; and
- Investment-related disclosures contained in the financial statements.

Based on our experience, there exists no single set of best practices for all investors to follow in the development and implementation of a successful investment program. Therefore, we defined the scope of our mandate to be to assess the reasonableness of the practices associated with each program element listed above and to offer recommendations on identified areas of potential improvement.

As a result of our review, we found the Lower Colorado River Authority Plan and Trust to have a reasonable and well-implemented investment strategy. Our research and findings support the contention that the Plan is well-managed with a clear and effective governance structure, a strong and ethical culture, well-established decision-making processes, and a simple and functional investment strategy. We found no critical-path practices which we believe would imperil the health and solvency of the Plan. Through our detailed review, we identified a number of potential improvement opportunities for consideration by the Plan’s Board and Staff. Of those we found, we have included the ones in this report most relevant to the topics listed above.

Methodology

In completing this report, we utilized three main approaches to evaluate the areas of focus: Trustee and Investment Staff interviews, document review, and quantitative portfolio analysis.

Interviews

We met with the following Board and Staff members at the Plan's offices or by phone:

- Jim Travis – LCRA CFO, Retirement Board Chairman
- Bart Johnson – LCRA Board of Directors, Retirement Board Trustee
- Ray Gill – LCRA Board of Directors, Retirement Board Trustee
- Steve Kellicker – LCRA SVP of Finance, Retirement Board Trustee
- David Smith – LCRA Treasurer, Retirement Board Trustee
- Dale Jurecka – LCRA Director, Retirement Board Trustee
- Steve Maitlin – LCRA Records Analyst, Retirement Board Secretary
- Vic Ramirez – In-house Legal Counsel
- Brian Falco – Investment Consultant
- Claire Chotiner – Investment Consultant

Broadly speaking, the interviews were conducted to uncover general concerns and identify improvement opportunities, as well as to identify areas for further investigation. We specifically asked about Board and Staff effectiveness with respect to culture, structure, resource sufficiency, decision-making processes, and policy compliance. We also initiated unstructured discussion with open-ended questions about what is currently working well and what improvement opportunities may exist.

Document Review

The Verus Project Team utilized the following documentation in its review:

- Investment policy
- Funding policy
- Ethics policy
- Performance reports
- Due diligence reports
- Meeting minutes
- Audited financial reports
- Actuarial valuation
- Other third-party work product

Observations made during our document review provided us with key insights into the Plan's work processes and helped us identify improvement opportunities and develop recommendations.

Quantitative Analysis

Members of our Portfolio Analytics Group, Risk Advisory Services Group, and Manager Research Group conducted the following quantitative analyses to assess the reasonableness of the Plan's investment strategy:

- Performance Analysis
- Mean Variance Analysis
- Risk Allocation Analysis
- Liquidity Analysis
- Index Analysis

Policy Review

We reviewed the Plan’s Investment Policy Statement, Funding Policy, and Code of Ethics for reasonableness, structure, and compliance. Within the Investment Policy, there exist a number of requirements which dictate how the Plan shall be managed. We reviewed these requirements in detail and sought documentary evidence demonstrating compliance. The remainder of this section addresses our findings and relevant recommendations with respect to each of the policies reviewed.

Investment Policy Statement (effective date: 6/13/19)

The investment policy statement (IPS) serves as a strategic guide in the planning and implementation of an investment program. When implemented successfully, the IPS anticipates and provides guidance on investment program issues related to: investment program governance; asset allocation; managing and monitoring internal and/or external managers; risk management; performance monitoring; and reporting. The IPS also establishes accountability for the various entities that may work on behalf of an investor. Perhaps most importantly, the IPS serves as a policy guide that can offer an objective course of action to be followed during periods of market disruption when emotional or instinctive responses might otherwise motivate less prudent actions. The IPS is a highly customized document that is uniquely tailored to the preferences, attitudes, and situation of each investor.

With this in mind, we reviewed the Plan’s current IPS to assess compliance with its key provisions. Compliance was determined to be demonstrated via discussion with staff and/or review of supporting documentation, as appropriate. The following table lists key policy guidelines, whether or not the Plan was in compliance, and our recommendation to attain compliance for those areas where we determined non-compliance.

Guideline Description	In Compliance? (Y/N)
Asset allocation weights within +/- 10 percentage points of target	Y
Use of cash restricted to max of 5% of manager portfolio	Y
International equity manager portfolios limited to 20% outside MSCI EAFE countries	Y
Equity managers single security limit of 5% of account value (at cost)	Y
Equity manager sector limit of 30% of account value	Y
Equity manager warrants and convertibles limit of 15% of account value	Y
Fixed income managers may not purchase any securities rated below BBB- or equivalent and must sell any securities that fall below BBB- within 90 days	Y
No fixed income securities issuer other than U.S. Government may represent more than 5% of portfolio	Y
Commercial paper and other short-term investments must be rated A-1/P-1	Y
Domestic fixed income manager mortgage-backed securities limit is 50% of account value	Y
Domestic fixed income manager foreign securities limit is 5% of account value	Y
The Board will receive quarterly performance reports	Y
Each investment manager shall provide a report on best execution	Y

While we found no areas of non-compliance with the Plan’s major investment policy provisions, the Board may wish to consider the following as potential improvement opportunities identified during our review.

- Adding dedicated section to specifically address roles & responsibilities of all plan fiduciaries, e.g., Board, Staff, Consultants, Managers, Custodian;
- Adding dedicated section explaining the investment philosophy of the Board to guide future decision-making. Coverage areas may include topics such as active vs. passive management, simplicity vs. complexity, use of illiquidity premium; patience vs. action, tactical asset allocation, etc.;
- Adding dedicated section describing the investment manager due diligence process;
- Customizing asset allocation ranges for each asset class, rather than +/- 10% for all;
- Removing 5% allocation to global fixed income, as it appears to be incorporated into the domestic fixed income allocation;
- Allowing managers to select the most efficient way to obtain their foreign currency hedge, rather than limiting them to using only forward contracts;
- Including language specific to commingled funds stating the guidelines in the prospectus or similar governing document will prevail;
- Fixing typo on p. 7, item #3 to read BAA3 instead of BAAA3; and
- Incorporating the target allocation weights and ranges, along with preferred benchmark, into an Appendix.

Funding Policy (effective date: 12/9/19)

When the Plan closed to new entrants in 2012, the Board adopted a funding policy pursuant to Texas Government Code Section 802-2011. The key features of the funding policy are summarized below.

Objective: Become fully funded within 25 years of date of adoption

Funding Approach:

- Amortize unfunded liability with level-dollar contributions through 2036
- Market value of assets is adjusted to spread actuarial gains or losses evenly over a 5-year period, limited to a corridor of 80% to 120% of market value

Actuarial Cost Method: Entry Age Normal

The funding policy also includes flexibility to deal with large, unexpected increases in the unfunded liability.

We found the Plan's funding policy to be reasonable and sufficient to meet the Plan's enterprise objectives.

Ethics Policy (effective date: 2/20/20)

During our interviews, we developed a keen sense of the seriousness with which the Board of Trustees views the importance of their duty to the Plan and its participants. In addition to a culture that encourages generally ethical behavior, the Board of Trustees mandates and verifies that each of its members completes Minimum Educational Training curriculum required by the Texas Pension Review Board, a portion of which is dedicated to Ethics. Also, Board members are expected to follow the Code of Ethics defined in the LCRA Employee Policy Manual. Based on our observations, we believe the current Board behaves ethically and responsibly in the fulfillment of its fiduciary duty.

One potential improvement opportunity is to develop an ethics policy specifically dedicated to the Plan and those charged with overseeing it. While the LCRA code of ethics contains broad statements regarding desired standards of conduct (e.g., “All LCRA employees shall be honest and ethical in their conduct and the performance of their duties.”), it does not address the specific ethical challenges faced by a fiduciary of a large investment program. Furthermore, as a policy designed for LCRA employees, it does not cover non-employee Trustees. Addressing this improvement opportunity may include the following.

1. Create and implement an ethics policy specifically designed to address the challenges faced by fiduciaries of a trust fund administered solely in the interest of its participants and beneficiaries, which may include some or all of the following topical areas, among others:
 - a. Description of fiduciary duties
 - b. Prohibited transactions
 - c. Gifts
 - d. Travel and related expenses
 - e. Reporting requirements
 - f. Compliance
2. Develop a compliance process and procedures to ensure all fiduciaries provide attestation that they are aware of and follow all elements of the ethics policy.

Asset Allocation

Asset allocation is broadly recognized as the primary tool institutional investors have at their disposal to meet return objective within a pre-determined risk tolerance. The Plan's risk and return objectives are to achieve its actuarial investment rate, currently set at 7.25% net of fees and expenses¹, within the risk parameters established by the Board.

Historically, the Plan has utilized an investment consulting firm, LCG Associates, as a non-discretionary advisor to assist with the development of a strategic asset allocation designed to meet the Plan's investment objectives. Based on our review of deliverables going back to 2014, which include the following:

- Asset/Liability Review (November 2014);
- Asset Allocation Recommendation (April 2015); and
- Asset Allocation Status Update & Recommendations (January 2018),

we believe the Plan's approach to developing its strategic asset allocation is reasonable, robust, and disciplined.

The Plan's evaluation process relied primarily on a mean-variance optimization ("MVO") analytical approach with inputs (expected returns, risk, and correlation) derived from a survey of 29 financial organizations. The Plan's liabilities were incorporated into a stochastic model to determine a reasonable range of outcomes for the Plan's funded ratio for different asset mixes. Scenario analysis was utilized to further assist the Board in their decision making. The output of these analyses was then factored into an overall recommendation to the Board that included target weights and ranges for each asset class, as well as how each asset class might best be implemented. The asset allocation is reviewed relative to targets on a quarterly basis.

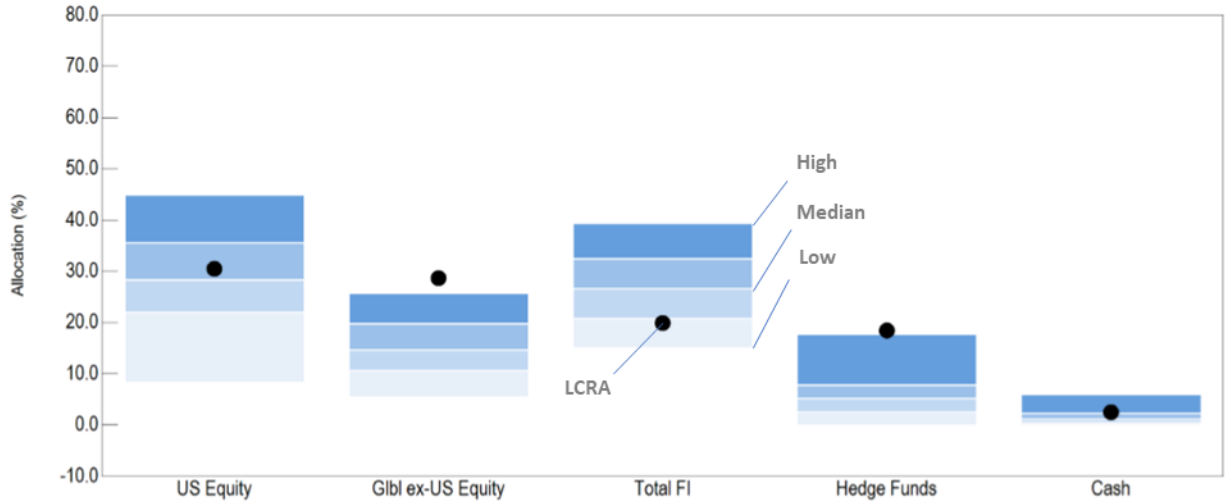
The Plan's current (12/31/19) strategic asset allocation targets² are shown below.

Asset Class	Policy Target
Domestic Equity	27.5%
International Equity	27.5%
Long/Short Equity	15.0%
Domestic Fixed Income	15.0%
Global Fixed Income	5.0%
Absolute Return	10.0%
Total Fund	100%

The following chart compares LCRA's current allocation in each asset class (represented by the dot) to the quartiled allocation range for each asset class in a peer group of U.S. public funds (represented by the floating boxes).

¹ Source: LCRA Retirement Plan Actuarial Valuation, January 1, 2019.

² Source: The Master Statement of Investment Policies and Objectives, as amended June 16, 2015.



Source: Verus, InvestmentMetrics

Relative to peers, the Plan’s current allocation is tilted toward heavier non-U.S. equity and hedge fund³ exposure and lighter fixed income. The international equity and hedge fund exposure in particular have been a headwind to peer-relative performance over the past 10-years or so through the end of 2019, as U.S. equity has been the strongest performing asset class since the end of the Global Financial Crisis in early 2009.

In addition, we conducted a mean-variance analysis on the Plan’s current policy allocation³, using our proprietary Capital Market Assumptions (“CMAs”). The table below shows a range of potential outcomes within which the Plan’s 10- year prospective performance could reasonably be expected to fall.

³ For purposes of these analyses, Hedge Funds includes Long/Short Equity and Absolute Return investments.

	Policy	2020 CMA's (10 Yr)			
		Return (g)	Return (a)	Standard Deviation	Sharpe Ratio (a)
US Large	22.0	5.5	6.6	15.4	0.31
US Small	5.5	5.7	7.7	21.1	0.28
Total Domestic Equity	28				
International Developed	22.0	7.0	8.4	17.5	0.37
Emerging Markets	5.5	7.6	10.4	25.6	0.33
Total Int'l Equity	28				
Total Equity	55				
Core Fixed Income	20.0	2.2	2.4	6.3	0.08
Total Fixed Income	20				
Hedge Fund	25.0	4.0	4.3	7.7	0.31
Total Non-Public Investments	25				
Cash	0.0	1.9	1.9	1.2	-
Total Allocation	100				

Mean Variance Analysis

Forecast 10 Year Return	5.3
Standard Deviation	10.8
Return/Std. Deviation	0.5
1st percentile ret. 1 year	-16.8
Sharpe Ratio	0.37

Based on this analysis, the Plan's expected average annualized return for the next 10 years is 5.3% with a 10.8% standard deviation and a Sharpe Ratio of 0.37.

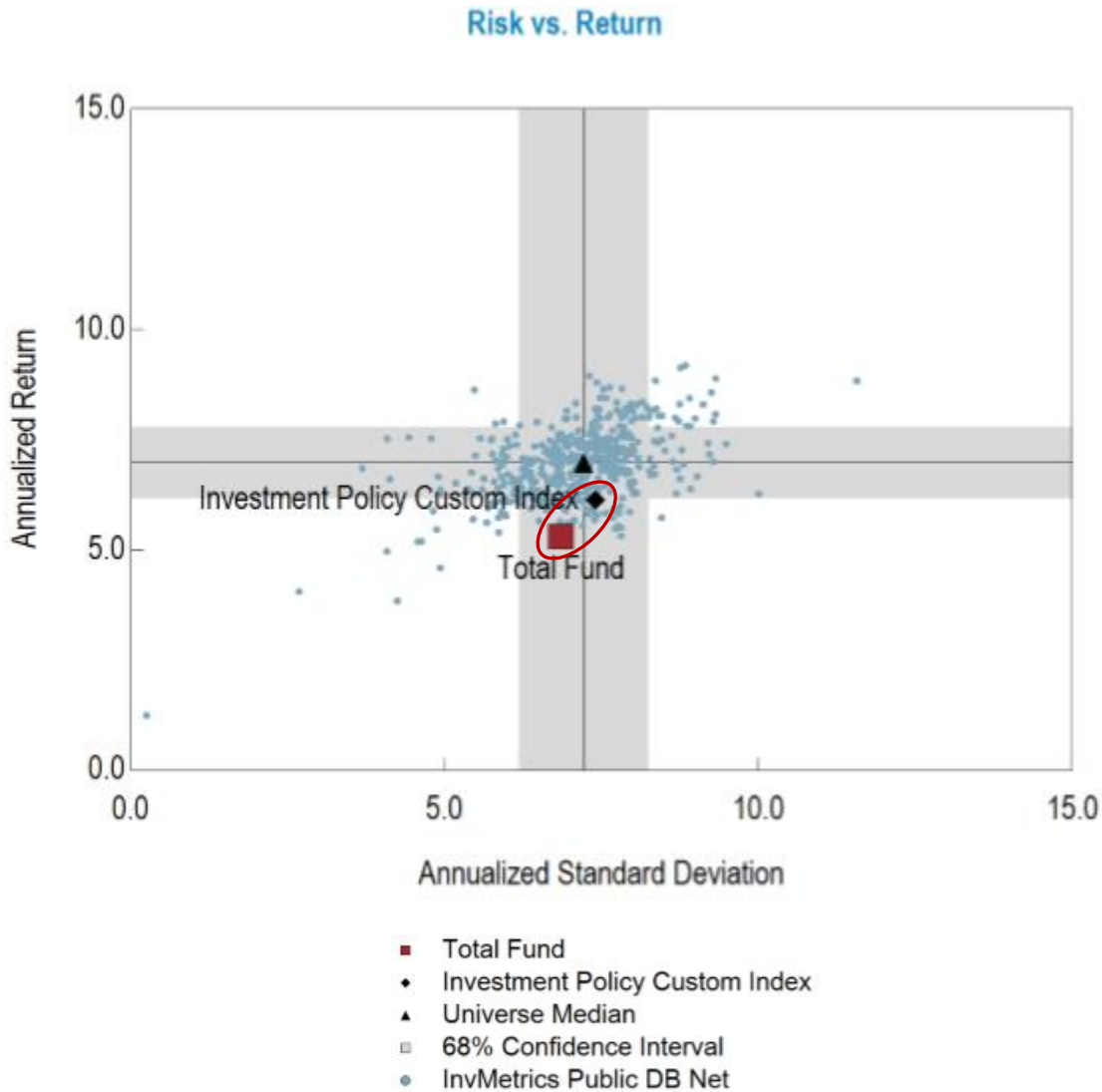
A mean-variance optimization modeling exercise provides highly precise analytical output that specifies an "optimal" asset mix for any given target rate of return or level of risk. However, it is broadly recognized that the quality of the output is only as good as the quality of the forecasted inputs, and forecasted inputs have historically been notoriously inaccurate. Therefore, MVO output should not be the only standard by which the reasonableness of a strategic asset allocation is measured. With that in mind, we further assessed the reasonableness of the Plan's asset allocation using historical net-of-fee performance relative to the total fund benchmark and to peers⁴ for historical periods ending 12/31/19.

	1 Yr	3 Yr	5 Yr	10 Yr
Total Fund	17.5%	6.9%	5.3%	7.3%
Policy Index	18.3%	8.1%	6.1%	8.0%
Percentile Peer Ranking ⁵	77	99	99	87

⁴ InvestMetrics Public Defined Benefit Plan Net Returns universe.

⁵ 1 is best.

The Plan has generally underperformed its policy benchmark and median peer, which appears to be the result of the investment portfolio being positioned more conservatively than the policy benchmark and median peer, leading to less risk and return in a secularly strong equity bull market, as shown in the exhibit below.



Based on these analyses, we believe the Plan may have difficulty meeting its 7.25% return objective over the next 10 years with the strategic asset allocation as currently implemented.

Three important caveats follow. First, our return forecast is based on estimates, which include a wide range of potential outcomes, and modeling the future inevitably involves estimation error. Second, we forecast returns for a period of 10-years as a period that engenders the lowest degree of forecasting error, and over the next 10 years, we believe we will exist in a historically low-return environment. However, the LCRA Retirement Plan will exist well past our 10-year forecast period, providing an opportunity for higher long-term returns closer to long-term historical averages. Finally, it is noteworthy that the Plans' 2019 Actuarial Valuation found the Plan's return assumption to be reasonable and recommended no change.

Portfolio Structure

Active vs. Passive Management

The Plan utilizes a common active/passive management strategy, whereby large cap domestic equity is viewed as a highly efficient asset class and therefore invested passively in an S&P 500 index fund. The remainder of the portfolio is invested actively.

The following table provides an accounting of the total portfolio broken down into active and passive positions as of 12/31/19.

Passive

<u>Asset Class</u>	<u>Market Value</u>	<u>% of Total Exposure</u>
Domestic Equity	\$ 104,695,232	24.3%
Total Passive	\$ 104,695,232	24.3%

Active

<u>Asset Class</u>	<u>Market Value</u>	<u>% of Total Exposure</u>
Domestic Equity	\$ 26,522,168	6.2%
International Equity	\$ 123,438,614	28.7%
Long/Short Equity	\$ 44,525,551	10.3%
Fixed Income	\$ 85,710,222	19.9%
Absolute Return	\$ 34,786,412	8.1%
Total Active	\$ 314,982,967	73.2%

Cash

<u>Asset Class</u>	<u>Market Value</u>	<u>% of Total Exposure</u>
Cash	\$ 10,761,626	2.5%

Combined

	<u>Market Value</u>	<u>% of Total Exposure</u>
Total Fund	\$ 430,439,825	100.0%

Conventional wisdom states that large cap domestic equity is an efficient asset class that should be largely invested passively, and other asset classes may be less efficient with active management having a better chance of generating excess returns. However, this view is not broadly supported by industry research, including the latest S&P Indices Versus Active (SPIVA) Scorecard Report⁶, which showed passive benchmarks outperforming active funds in small cap and international equity investment funds 82.2% of the time and 87.8% of the time, respectively, over the 15 years ending 3/31/20. That said, the Plan has experienced moderate success with its current suite of traditional active managers, as shown in the following table.

⁶https://www.ifa.com/articles/despite_brief_reprieve_2018_spiva_report_reveals_active_funds_fail_dent_indexing_lead_-_works/

Asset Class	Manager Return	Benchmark Return	Relative Performance	Inception Date
Small Cap Growth	13.8%	13.8%	0.0%	Nov-08
Small Cap Value	15.3%	14.8%	0.5%	Mar-09
International Developed Growth	8.9%	10.1%	-1.2%	Sep-16
International Developed Value	4.7%	2.7%	2.0%	Feb-16
Emerging Markets	4.1%	2.7%	1.4%	Nov-17
Fixed Income	5.5%	5.5%	0.0%	Oct-94

In light of the Plan’s experience, which is somewhat in contravention to the highest probability outcome identified in the latest research, we find the Plan’s current active/passive structure to be reasonable, but we nevertheless encourage consideration of an increased share of passive investments in the portfolio.

Liquidity

The Plan’s Investment Staff monitors liquidity and cash needs closely and reports on the topic regularly to the Investment Committee and the Board of Trustees. The following reports are reviewed by the Board on a quarterly basis:

- Liquidity Summary – report on how long it will take to liquidate the entire portfolio and over what time period;
- Historical Annual Financial Reconciliation – report that includes net cash flow over preceding calendar years back to 1997
- Annual Cash Flow Report – detailed review of net cash flow, including projections

In order to assess liquidity sufficiency, we conducted an analysis of the Plan’s cash flow needs and the liquid financial assets that can be used to meet them. Through this analysis, we answer the question, “Will the plan be forced to sell illiquid assets to cover cash outflows in the next 5 years?”. We quantify this dynamic using a liquidity coverage ratio (LCR) defined as follows:

$$\text{Liquidity Coverage Ratio (LCR)} = \frac{\sum(\text{Liquid Financial Assets (stressed market condition)}) + \sum(\text{Distributions from Illiquid Assets}) + \sum\left(\frac{\text{Employer}}{\text{Employee}} \text{Contributions}\right) + \sum(\text{Investment Income})}{\sum(\text{Benefit Payments}) + \sum(\text{Capital Calls for Illiquid Assets}) + \sum(\text{Plan Expenses})}$$

LCR Value	Implication
<1	The plan will need to sell illiquid assets to cover cash flows
1	The plan has sufficient liquidity to cover all cash flows
>1	The plan will not be required to sell illiquid assets to cover liquidity needs

The table below calculates the LCR under various deterministic market drawdown scenarios.

LCRA RETIREMENT PLAN AND TRUST

	Baseline	20% Drawdown	25% Drawdown	30% Drawdown	35% Drawdown	40% Drawdown
Liquid Financial Assets	430,439,816	344,351,853	322,829,862	301,307,871	279,785,880	258,263,890
Contributions	130,000,000	130,000,000	130,000,000	130,000,000	130,000,000	130,000,000
Benefit Payments	235,023,079	235,023,079	235,023,079	235,023,079	235,023,079	235,023,079
Liquidity Coverage Ratio	2.38	2.02	1.93	1.84	1.74	1.65

We also conducted two market-based simulations. The first is a 1,000-trial stochastic simulation, based on our proprietary capital market assumptions forecast (the same CMAs used in the asset allocation review). The second is a 90-trial simulation, based on historic US market return data since 1928.

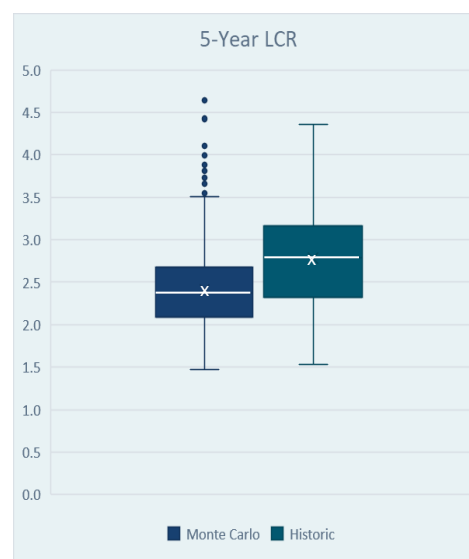
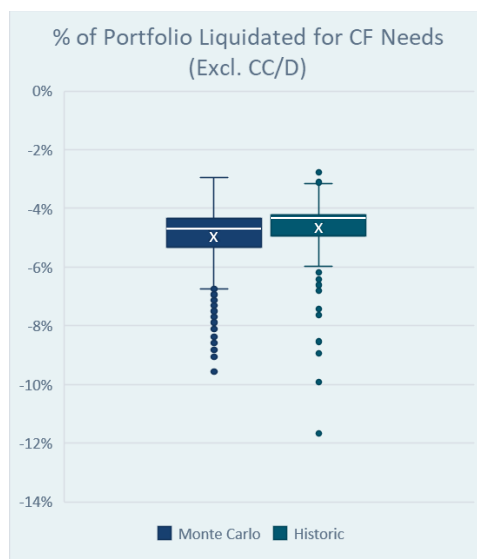
The output of this analysis is shown below in the form of two “box-and-whisker” charts. The first chart shows the expected percentage of the portfolio required to meet annual cash flow needs. The second chart shows the 5-year Liquidity Coverage Ratio.

The following instructions will help in interpreting these charts:

- The top line in each chart represents the 100th percentile (all observations excluding outliers exist at or below this line)
- The top bar of the box in each chart represents the 75th percentile
- The middle line within each box represents the 50th percentile
- The x within the box represents the data set average
- The bottom bar of each box represents the 25th percentile
- The bottom line in each chart represents the 0th percentile (all observations excluding outliers exist at or above this line)
- The dots represent individual outlier scenarios defined as 1.5x the length of the interquartile range

Key observations include the following:

- On average, the Plan will need to liquidate roughly 5% of its assets each year in order to meet cashflow needs, and it is highly unlikely the Plan will need to liquidate less than 3% of assets or more than 7% of assets in any single year
- The 5-year LCR averages around 2.5-2.75, depending on the returns model used
- The absolute minimum under any of our return models is 1.5, which essentially means the Plan holds at least 50% more liquid assets than is needed to satisfy net cash outflows over the period



In aggregate our analysis indicates that even under extreme market conditions, the Plan maintains sufficient liquidity to cover net cash outflows. This implies the Plan may be able to utilize illiquid assets in its strategic allocation to increase the expected return of the investment portfolio, despite high negative cashflow and the closed status of the plan.

Manager Evaluation

With the help of the investment consultant, the Plan deploys a robust process for assessing manager suitability when hiring managers and for monitoring managers once they have been hired. The Plan's investment consultant produces a detailed "search book" when evaluating managers for initial selection and a performance report to monitor existing managers, which is reviewed with the Board on a quarterly basis.

Manager Selection

Currently, the Plan's process for conducting manager searches contains the following key steps:

- Identify need
- Identify list of qualified candidates
- Conduct preliminary evaluation and create short-list of preferred managers
- Review short-list with Board
- Interview finalists
- Conduct on-site due diligence, as appropriate
- Select and implement

There have been several opportunities to evaluate this process through examples of newly hired managers over the past several years, and in our opinion, the process by which investment managers are hired is reasonable and thorough.

Our only recommendation in this area is to more clearly codify the process in the Statement of Investment Policies and Objectives.

Manager Monitoring

Once a manager is hired, the focus shifts to ensuring they are meeting established performance expectations and can be reasonably expected to continue to do so. Typically, this is accomplished by tracking investment performance through time and periodically reviewing qualitative factors such as style drift and organizational stability. Currently, the Plan's investment consultant is responsible for tracking manager performance and presenting a summary to the Board on a quarterly basis. The summary consists of historical periodic returns versus a representative benchmark and peer group, a set of portfolio characteristics, and a strategy overview.

We recommend additional qualitative information be incorporated into the current manager summary (e.g., style map positioning over time, asset growth over time, investment team personnel turnover) to provide additional insights into performance expectations and/or identify areas for further investigation.

Benchmarking

Effective benchmarks are ones that assist an investor in determining whether or not an investment strategy is meeting performance expectations over time. Characteristics of an ideal benchmark can be easily recalled by using the SAMURAI mnemonic:

- (S)pecified in advance
- (A)ppropriate
- (M)easurable
- (U)nambiguous
- (R)eflective
- (A)ccountable
- (I)nvestable

Most traditional public markets investment strategies can typically find benchmarks that meet the SAMURAI criteria, but it becomes more difficult with alternative investment strategies. We found that in most cases the Plan utilizes a set of benchmarks that reflects the investment strategies deployed across the portfolio and follows the SAMURAI criteria as closely as possible.

Individual Managers

All the Plan's investment strategies operate within the public markets be they traditional or alternative. The table below lists the benchmark selected for each individual investment manager.

Traditional

Strategy	Benchmark
SSgA S&P 500 Index Fund	S&P 500 Index
Ranger Small Cap Fund	Russell 2000 Growth Index
Wedge Capital Management	Russell 2000 Value Index
Invesco International Growth	EAFE Growth Index
Pyrford International Equity	EAFE Value Index
GQG Emerging Markets	MSCI Emerging Markets Index
BHMS Fixed Income	Barclays US Aggregate Bond Index
Cash	90-day T-bills

Alternative

Strategy	Benchmark
Parametric Defensive Equity	50% S&P 500 / 50% 90-day-T-bills
Senator Global Opportunity Fund	HFRI Event Driven Index
ArrowGrass International Fund	HFRI FoF Conservative Index
Rimrock High Income Plus Fund	Barclays US Aggregate Bond Index

Composites

The Plan also uses asset class and total fund composites that are essentially weighted averages of the underlying benchmarks, as show below.

Composite	Benchmark
Domestic Equity	80% S&P 500 / 20% Russell 2000
International Equity	80% EAFE / 20% MSCI EM

LCRA RETIREMENT PLAN AND TRUST

Total Equity	40% DE / 36% IE / 24% HFRX
Total Fund	30% DE / 25% IE / 15% HFRX / 20% Barc Agg / 10% HFRI Conservative

We believe these benchmarks are reasonable and appropriate with the exception of the benchmark used to evaluate the Rimrock High Income Plus Fund. Our analysis shows a slightly negative correlation and Beta to its current benchmark over the past five years. Based on our understanding of the Rimrock strategy and the data below, we believe a benchmark defined as a 50/50 mix of Barclays US Corporate HY Index and the Credit Suisse Leverage Loan Index would be more appropriate.

Benchmark	Correlation	Beta
Barclays US Aggregate	-0.04	-0.08
Barclays US Corporate HY	0.72	0.53
Credit Suisse Leverage Loan Index	0.86	0.72

Trailing 5 Years (thru May 2020)

Fees and Trading Costs

Fees

To assess the Plans' management fee structure, we utilized data from the Callan Institute 2019 Investment Management Fee Study⁷. We compared the Plan's actual fee to the median fee in the broadest universe for each representative asset class for each of the Plan's traditional managers. As can be seen in the table below, the Plan compares favorably to the universe median in most cases.

Asset Class	Sub-asset class	(A)ctive / (P)assive	Assets	Actual Fee (bps)	Universe Median (bps)
<i>Domestic Equity</i>					
	Large Cap Core	P	\$ 104,695,234	2.5	3.7
	Small Cap Growth	A	\$ 14,265,998	85	95
	Small Cap Value	A	\$ 12,256,170	100	90
<i>International Equity</i>					
	Developed Growth	A	\$ 51,903,882	60	70
	Developed Value	A	\$ 50,515,422	65	70
	Emerging Markets	A	\$ 21,019,301	80	90
<i>Alternatives</i>					
	Defensive Equity	A	\$ 21,933,943	35	60
	Long/Short Equity	A	\$ 22,591,608	Mgt: 1.25% Inctve: 20%	n/a
<i>Fixed Income</i>					
	Core	A	\$ 85,710,222	26	25
<i>Absolute Return</i>					
	Absolute Return	A	\$ 12,685,408	Mgt: 1.625% Inctve: 20%	n/a
		A	\$ 22,101,004	Mgt: 0.75% Inctve: 15%	n/a

Benchmarking the Plan's hedge fund manager fees is more difficult due to the heterogeneity of the various strategies available for investment. Historically, a typical fee structure has been "2 and 20", indicating a 2.00% management fee and 20% incentive fee (over some pre-established hurdle rate). Hedge fund fees have been gradually coming down due to increased competition and disappointing performance generally, but by that historical measure, the Plan compares favorably.

Trading Costs

We did not evaluate trading costs as part of our review primarily because a meaningful and accurate trading cost analysis requires highly specialized and technical analytical tools and capabilities, which we do not possess, and a level of effort we defined as outside the scope of this project. If LCRA is interested in pursuing such a study, we would be happy to provide a referral to a well-regarded specialty firm we have worked with in the past.

⁷ <https://www.callan.com/wp-content/uploads/2019/12/Callan-2019-IM-Fee-Study.pdf>

Leverage, FX, and Hedging

Leverage

The Plan uses no leverage at the total fund level or in the bulk of its investment strategies. Leverage may be used within the Plan's four Long/Short Equity and Absolute Return mandates, which make up approximately 18% of the total investment portfolio (as of 12/31/19). Each of these strategies lie within a commingled fund or limited partnership structure, which limits the liability to the Plan to the assets invested in the fund. These mandates may also utilize hedging strategies as a means to generate returns.

Currency Hedging

The Plan does not utilize currency hedging strategies at the total fund level and leaves the hedging decision to the discretion of the managers investing in non-U.S. markets. Each of the managers have acknowledged the authority to hedge foreign currency exposure, but it is not a primary aspect of their strategies. Our expectation is most of the foreign currency exposure in the portfolio will remain unhedged, as is typical for most non-U.S. investment strategies.

Based on The Master Statement of Investment Policies and Objectives, "The foreign currency exposure of the portfolio may be hedged back to the U.S. dollar using forward foreign exchange contracts.". We recommend this language be updated to allow managers to use whatever hedging vehicle they deem to be most appropriate at the time.

Disclosures

With respect to assessing investment-related disclosures, we reviewed a sample of recent annual reports for other public pension plans, including CalPERS, Texas Municipal, Contra Costa County, Houston Firefighters, and Houston Police Officers. While there were variances in presentation style and format, each plan covered similar information within the following broad categories.

- Independent Auditor’s Report
- Management discussion
- Summary of assets and liabilities
- Investment returns
- Managers and investment fees
- Top holdings

In absolute and relative terms, we found the Plan’s disclosures to be a reasonable and sufficient representation of its investment program.