



Board of Retirement Regular Meeting

Sacramento County Employees' Retirement System

Agenda Item 17

MEETING DATE: September 16, 2020

SUBJECT: SCERS Liquidity Study

SUBMITTED FOR: Consent **Deliberation and Action** **Receive and File**

RECOMMENDATION

Staff recommends that the Board receive and file the liquidity study performed by SCERS' general investment consultant, Verus Advisory.

PURPOSE

This agenda item supports SCERS' Cash Management Policy, which calls for Staff and SCERS' general investment consultant to update the Board on SCERS' liquidity profile annually.

SUMMARY:

Verus recently conducted an annual liquidity study for SCERS. Verus generates two measures for liquidity, a (1) Liquidity Coverage Ratio (LCR) and a (2) Modified Liquidity Coverage Ratio (MLCR). Both ratios measure whether an institutional investor has sufficient cash flows over a 5-year period. The MLCR is a more conservative measure, as it includes only liquid diversifying assets in its measure, whereas the LCR includes both liquid risk assets and liquid diversifying assets. The results of the liquidity study show that SCERS has a LCR of 2.2, compared to the 2019 measure of 2.23. The MLCR of 1.0 compares to the 2019 measure of 1.26.

As explained below, Verus updated its modeling over the past year to incorporate forward looking data, so the comparisons to last year are not apples to apples. However, the measures do demonstrate that SCERS' liquidity position is less than it was a year ago, though still at healthy levels. No recommendations are being made to the Board.

The liquidity study will be conducted again in 2021 to incorporate the increased contribution rates associated with the recently approved reduction in SCERS' actuarial rate of return to 6.75%, which should increase SCERS' liquidity profile. The data from liquidity studies are used as inputs in asset liability modeling (ALM) studies, which SCERS will be conducting in 2021. The liquidity data will help SCERS determine the level of illiquid private market assets the plan can maintain while ensuring sufficient liquidity to meet fund obligations.

BACKGROUND

In 2016, Verus and Staff incorporated a formal cash flow and liquidity analysis into the asset liability modeling (ALM). Since that time, Verus has conducted a few liquidity studies for SCERS, with the last one taking place in June 2019. It should be noted that Verus recently updated its approach to conducting a liquidity study, with material changes in how they model measures of liquidity. The modeling includes more forecasts in the model, including incorporating forward looking capital market assumptions, whereas prior liquidity modeling took a more linear approach. The updated approach provides a more accurate measurement of a plan's liquidity profile. As a result, while it is helpful to compare the liquidity results of this study the prior studies, it is not a clean 'apples to apples' comparison.

A liquidity study provides an understanding of the plan's overall cash flow profile, and insight into how the plan can address future cash flow needs, both from the actuarial and investment sides. The analysis is particularly useful given SCERS' meaningful private markets exposure, which is illiquid. Past studies have determined that while SCERS has negative cash flows, due to benefit payments exceeding contributions, its overall liquidity profile remains healthy.

SCERS created a cash management policy in 2019, which assists in ensuring that SCERS is in a sufficient liquidity position across economic and market cycles. The objectives of the cash management policy are to: (1) ensure that member benefit payment and funding obligations are met without interruption regardless of financial market conditions; (2) provide a process for the oversight and management of cash; and, (3) oversee liquidity risk and maintain appropriate liquidity profiles within the SCERS Plan. The Policy identifies sources of cash and various liquidity categories within SCERS' plan, and the time it would be expected to convert assets into cash. The policy also identifies how liquidity is to be measured within the SCERS plan, and requires SCERS to conduct a liquidity study annually.

LIQUIDITY MANAGEMENT OBJECTIVES

There are multiple objectives of a liquidity management framework. These include:

- Maintaining sufficient cash to meet member benefit payment and other funding obligations such as plan expenses and the funding of investment commitments.
- The ability to rebalance the investment portfolio to target allocations.
- The ability to make modifications to the asset allocation when needed.

SCERS' annualized actuarial rate of return is 7%; however, the SCERS Board recently approved a reduced actuarial rate of 6.75%, which will go into effect to start the 2020-2021 fiscal year (July 1, 2020). The liquidity study that Verus conducted for this study utilizes contribution rates based on the 7% actuarial rate. Verus will run a fresh liquidity study as part of next year's asset liability modeling (ALM) study, which will incorporate adjusted higher contribution rates reflected with the 6.75% actuarial rate of return, and should improve SCERS' liquidity ratio.

The investment program aims to earn the actuarial rate of return consistently, with less volatility in the range of outcomes that the portfolio is subjected. The current strategic asset allocation

emphasizes diversification across market segments to reduce volatility and portfolio downside and to generate increasing levels of cash flows. However, in a stressed market environment SCERS' assets can experience negative returns, which makes earning the actuarial rate of return difficult. Falling short of the actuarial rate of return over an extended period puts pressure on SCERS' ability to meet benefit payment and funding obligations, which emphasizes the need for maintaining sufficient liquidity within the investment portfolio.

That scenario requires additional consideration given that SCERS, like many public pension plans, is a mature plan with negative cash flows, meaning member benefit payments going out are greater than employer and employee contributions, and net investment income, coming in on an annual basis, as shown on slide 5 of the Verus presentation. SCERS currently has a 1.78% deficit, which is expected to increase toward 3% over the next 10 years. The increasing contribution rates that will take effect when the 6.75% actuarial rate of return goes into effect will mitigate some of this deficit. It should also be noted that SCERS created the dedicated cash allocation of 1% in 2019 to help mitigate some of the divergence between benefit payments and contributions.

The negative cash flow profile is also influenced by private market investments, where due to the 'J-curve effect' in the earlier stages of allocating toward a target allocation, cash outflows (capital calls) are greater than cash inflows (distributions). As private market portfolios become more mature, cash inflows eventually outpace cash outflows to create a positive net cash flow profile. SCERS' private equity portfolio has approached being cash flow positive over the past year, whereas private real assets and private credit are still earlier in their existence and are therefore still cash flow negative.

It should be noted that a negative cash flow position represents the gap between a plan's cash inflows and cash outflows, but does not necessarily represent a requirement to cut or liquidate plan assets to cover the gap. If a plan is in a negative cash flow position, there are ways to address the gap. For SCERS this could include: (1) using available cash; (2) rebalancing portions of the portfolio that are overweight to their respective targets; (3) waiting for the maturation of private market investments, which as mentioned previously should become cash flow positive over time; (4) increasing contributions toward the plan (which will occur when the 6.75% actuarial rate of return goes into effect); or (5) selling assets (which would be a last case scenario).

SCERS, like many public plans, is operating in a cash flow environment that has less of a margin for error compared to past eras, where most plan had positive net cash flows. This places greater emphasis on managing cash flows, and creates limits on the level of illiquid asset exposures within a portfolio. At the same time, illiquid assets have demonstrated an ability to earn higher returns than liquid assets, as well as higher and more consistent cash flows (in the case of private credit and parts of real assets).

SCERS LIQUIDITY PROFILE

Verus breaks SCERS' assets into different liquidity categories on page 4 of the attached presentation. The first category includes liquid risk assets, which are assets that SCERS would

prefer not to sell in a market downturn. These assets are for the most part liquid, with public equities generating the greatest liquidity; generally converted to cash within 3 days. Liquid credit strategies tend to have 30 day liquidity, and open end core real estate and hedge funds (absolute return) have 30 to 90 day liquidity. It should be noted that absolute return and core real estate strategies can also see liquidity move to one year in a stressed liquidity environment, in which a fund could be subject to exit queues and investor gates.

The second category consists of liquid diversifying assets, which includes assets SCERS would most likely be more comfortable selling in a market downturn, and make up the liquid assets used in the more conservative MLCR that Verus calculates. These assets consist of cash and defensive fixed income strategies, which contain very liquid assets that can be converted to cash within 3 days. SCERS also calculates a broader LCR, which includes both 'liquid risk assets' and 'liquid diversifying assets.' The LCR and MLCR are explained below.

The third category consists of illiquid assets such as private equity, private credit, private real assets, and non-core real estate. These assets are invested within multi-year fund structures, so liquidity, for purposes of this analysis, is measured at one year, or 365 days, and for the most part are considered illiquid, unless sold in the secondary private markets at a discount to fair value.

LIQUIDITY ANALYSIS

Verus' approach to liquidity studies analyzes a plan's liquidity by comparing a plan's liquid assets and cash inflows to a plan's cash outflows (slide 7 of the Verus presentation). Within the study, Verus measures SCERS' liquidity over a 5-year period.

Cash inflows include:

- Liquid financial assets
- Employer and employee contributions
- Investment income
- Distributions from illiquid assets (i.e., private equity; private credit; real assets; real estate)

Cash outflows include:

- Member benefit payments
- Capital calls for illiquid assets
- Plan expenses

As referenced previously, Verus runs its liquidity analysis using two measures:

- Liquidity Coverage Ratio (LCR)
- Modified Liquidity Coverage Ratio (MLCR)

LCR:

The LCR measures whether a plan has enough cash flows and liquid assets to meet cash outflows over a 5-year period, without having to sell illiquid assets to cover liquidity needs. In the study, SCERS' LCR measures 2.2 as referenced on slide 9, meaning it has 2.2x coverage

in liquidity available relative to SCERS' spending needs over the next 5 years. Verus views any measure greater than 1 as sufficient liquidity; however, a measure above 2 is optimal. As mentioned earlier, Verus has updated its approach to liquidity modeling, by incorporating forward looking capital market assumptions, so the results of this year's study are not 'apples to apples' with the study ran in June of 2019. The 2.2 measure above includes Verus' updated modeling techniques. Adjusting the numbers for last year's modeling, SCERS' LCR in 2020 is 2.02 compared to 2.23 in 2019 (slide 8).

MLCR:

While the LCR measure is useful in understanding SCERS' liquidity profile, it assumes that SCERS would be comfortable selling all types of liquid assets in a drawdown period to meet the plan's liquidity needs.

Within the category of 'liquid plan assets', not all assets would be optimal to sell in a stressed market environment. For example, U.S. and non-U.S. equities would most likely experience meaningful losses in a broad market downturn, and would not be favorable to sell for liquidity purposes. Rather, SCERS would most likely favor selling U.S. Treasuries and SCERS' core plus fixed income assets under this scenario. U.S. Treasuries often trade at a higher value in a stressed market environment, and represent SCERS' most liquid asset outside of cash, while core plus fixed income can sometimes trade at a higher value, or trade at a lower negative value, than public equities.

Therefore, Verus also runs the liquidity study using an alternative and more conservative measure called the MLCR. The MLCR measures whether a plan would need to sell liquid risk assets, as described above, to cover cash outflows in the 5 years after a major market dislocation. Instead of measuring all 'liquid financial assets' in the numerator, the MLCR only includes liquid diversifying assets, including cash, U.S. Treasuries, core plus fixed income, global fixed income, and liquid real return. The MLCR complements the LCR, and is another way to view SCERS' liquidity profile.

SCERS' MLCR measures 1.0 (as referenced on slide 11), meaning it has 1x coverage on assets that SCERS would be comfortable selling (U.S. Treasuries, core plus fixed income, global fixed income, and liquid real return) to cover liquidity needs over the 5 years following a market dislocation. As mentioned earlier, Verus has updated its approach to liquidity modeling, so the results of this year's study are not 'apples to apples' with the study ran in June of 2019. The 1.0 measure above includes Verus' updated modeling techniques. Adjusting the numbers for last year's modeling, SCERS' MLCR in 2020 is 1.15 compared to 1.26 in 2019 (slide 10).

Verus views a reading above 1.0 as an optimal measure for the MLCR, which translates to a plan not being in a position of needing to sell any liquid risk assets to meet planned obligations over the 5 years following a market dislocation. SCERS' current measure of 1.0 puts it right around the optimal target; however, the MLCR should be viewed in conjunction with the LCR, as the LCR also measures liquid risk assets that can be accessed to account for any shortfall exposure to liquid diversifying assets.

SUMMARY OF CHANGES IN LIQUIDITY:

Both the LCR and MLCR ratios decreased since the last time Verus conducted a liquidity study in 2019. The reasons for the decrease in both ratios, outside of the Verus modeling update described earlier, are as follows:

- SCERS' benefit payments relative to contributions are higher this year than they were last year (contributions will increase as the reduced 6.75% actuarial rate of return goes into effect, which should improve the liquidity ratios).
- SCERS actual allocation to illiquid assets has increased as implementation has progressed toward target allocations within private equity, real assets, and private credit.
- Verus eliminated an assumed 2.0% income component that was part of last year's modeling
 - Verus' model assigned a 7% return for SCERS' plan, which includes income.
 - Adding the 2% income component to Verus' updated modeling approach would double the income component of the return, which is already include in total return.
- Projected capital calls within the private market modeling performed by Cliffwater increased this year relative to last year.
 - This is expected as an increasing number of funds that SCERS has committed capital to calls capital to make underlying fund investments.
 - Increasing distributions in subsequent years will offset the increasing capital calls.

Staff and Verus do not believe that the current liquidity data requires any action. The MLCR is right around the preferred target of above 1.0. However, the MLCR should not be viewed in isolation, as both the LCR and MLCR complement one another. SCERS' LCR rating of 2.2 means that SCERS has ample liquidity within liquid risk assets that can be accessed through rebalancing to account for any deterioration in the MLCR and insufficient levels of liquid diversifying assets.

NEXT STEPS

The liquidity study performed by Verus provides a good look-through as to SCERS' current liquidity profile. The analysis demonstrates that SCERS is in a healthy liquidity position, though the ratios have decreased since the last study.

A follow-up liquidity study will be conducted in 2021 as part of the next ALM study, and will incorporate the increased contribution rates associated with the recently approved reduction in SCERS' actuarial rate of return to 6.75%, which should increase SCERS' liquidity profile.

Output from the liquidity study is used as an important input in ALM studies. SCERS has a meaningful allocation to illiquid private market asset classes, so the output of the next liquidity study will help guide SCERS as to the level of private market exposure to model within potential asset allocation mixes. Staff doesn't expect significant changes to the target allocation of private markets; however, marginal changes could be recommended based on risk/return expectations of underlying assets classes and SCERS' liquidity profile when the next liquidity study is concluded. If SCERS' liquidity profile were to deteriorate to a lower level, this could necessitate reducing the target allocation to illiquid asset classes.

ATTACHMENTS

- Verus Liquidity Study Presentation

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/S/

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Reviewed by:

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**PERSPECTIVES
THAT DRIVE
ENTERPRISE
SUCCESS**



SEPTEMBER 2020

Liquidity Study

Sacramento County Employees' Retirement System

SCERS Objectives and Characteristics

Defined Benefit Plan

OBJECTIVES

1. Achieve 6.75% Long Term Rate of Return Assumption
2. Achieve the return as efficiently & effectively as possible
3. ***Always have enough cash and available liquidity on hand to fund benefit payments and plan commitments***

Managing liquidity risk is a primary imperative for the trustees

PLAN CHARACTERISTICS

1. Cash flow negative (benefit payments > contributions)
2. Meaningful exposure to illiquid private market investments
3. Planned increase in employer/employee contributions for 2021 are NOT included in this analysis

Purpose and objective

Purpose

The purpose of the liquidity management framework is to ensure the 5-year liquidity profile of SCERS is consistent with the guiding principles set forth in the Investment Policy Statement.

Objective

The objective of the liquidity management framework is to establish limits on the 5-year liquidity profile of the Plan Portfolio and control the element of risk resulting from uncertainties associated with the ability to convert investments to cash in order to: (1) always have enough cash on hand to pay fund obligations, (2) rebalance the Plan Portfolio and (3) change investment strategy / asset allocation.

2020 Liquidity Model Assumptions

Liquidity assumptions by asset class

Asset Class	Allocation	Liquidity Model Classification	Days to Convert to Cash
US Large	18.0%	Liquid Risk Assets	3
US Small	2.0%	Liquid Risk Assets	3
International Developed	16.0%	Liquid Risk Assets	3
Emerging Markets	4.0%	Liquid Risk Assets	3
High Yield Corp. Credit	1.0%	Liquid Risk Assets	30
Bank Loans	1.0%	Liquid Risk Assets	30
Hedge Fund	10.0%	Liquid Risk Assets	30-90
Core Real Estate	5.0%	Liquid Risk Assets	90+
Cash	1.0%	Liquid Diversifying Assets	1
US Treasury	5.0%	Liquid Diversifying Assets	1-3
Global Sovereign ex-US	3.0%	Liquid Diversifying Assets	3
Core Fixed Income	10.0%	Liquid Diversifying Assets	3
Liquid Real Return	2.0%	Liquid Diversifying Assets	3
Private Equity (Direct)	9.0%	Illiquid Risk Assets	Illiquid
Private Credit	4.0%	Illiquid Risk Assets	Illiquid
Value Add Real Estate	1.0%	Illiquid Risk Assets	Illiquid
Opportunistic Real Estate	1.0%	Illiquid Risk Assets	Illiquid
Private Real Assets	7.0%	Illiquid Risk Assets	Illiquid
	100%		

- Verus updated our liquidity model in 2020 to include several new features
- The new model uses the same basic framework for measuring liquidity (LCR and MLCR) but how it makes return projections, handles Plan cash flows and runs scenario analysis is different
- We believe this new liquidity model will provide a more realistic projection of SCERS' liquidity position

SCERS' Pension Cash Flows

Calendar Year	Beginning of Year Market Value of Assets	Total Contributions	Total Benefit Projection + Expenses	Net Cash Flow %	Net Cash Flow (\$)
2020	10,065,318,045	419,622,267	598,936,394	-1.78%	-179,314,127
2021	10,584,242,347	439,385,326	630,092,547	-1.80%	-190,707,221
2022	11,128,120,237	445,904,985	665,282,945	-1.97%	-219,377,960
2023	11,680,288,831	458,092,104	702,135,228	-2.09%	-244,043,124
2024	12,245,632,897	465,042,284	739,979,196	-2.25%	-274,936,912
2025	12,818,649,228	470,960,881	778,830,618	-2.40%	-307,869,737
2026	13,397,672,521	481,174,044	818,929,615	-2.52%	-337,755,571
2027	13,986,279,529	493,427,409	859,813,843	-2.62%	-366,386,434
2028	14,586,467,439	506,311,993	901,345,464	-2.71%	-395,033,471
2029	15,199,024,616	519,718,313	943,693,416	-2.79%	-423,975,103

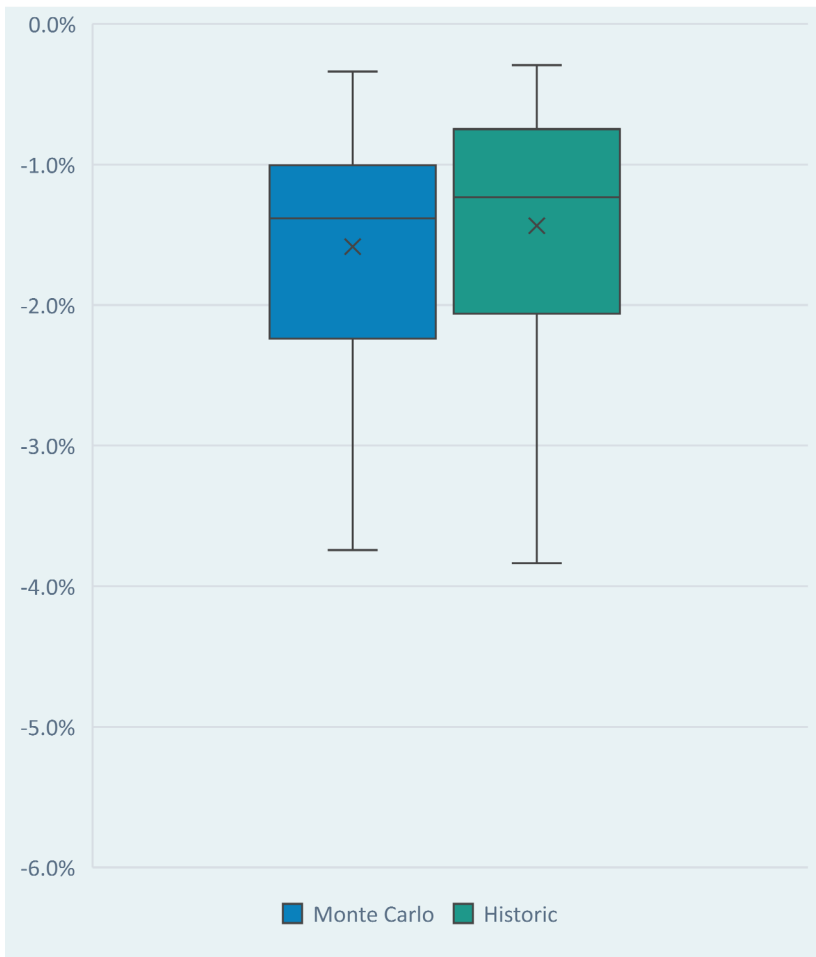
SCERS has a 1-3% cash flow deficit each year, excluding capital calls and distributions from private investments

Deficit is projected to grow overtime, reaching 2.8% in 10 years

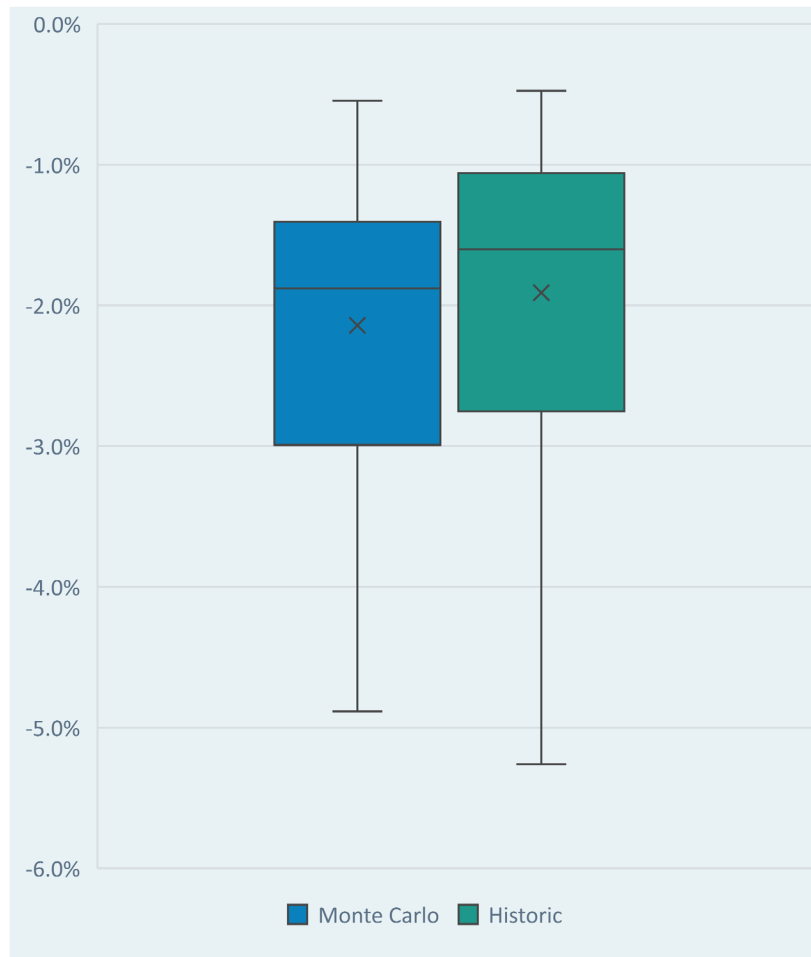
Data provided by Segal

Liquidity needed to meet cash flow needs

% OF TOTAL PORTFOLIO LIQUIDATED FOR CF NEEDS



% OF LIQUID PORTFOLIO LIQUIDATED FOR CF NEEDS



Based on our projections, SCERS will have a negative cash flow each year of around 1.6% of Plan assets.

Includes capital calls and distributions from private funds

– Actuarial information provided by Segal

– Private market projections for capital calls and distributions provided by Cliffwater and Townsend

LCR

Does the plan need to sell illiquid assets to cover cash outflows over a 1-year & 5-year period?

This is the same LCR formula used in prior liquidity models

$$\text{Liquidity Coverage Ratio (LCR)} = \frac{\begin{aligned} & \text{Liquid Financial Assets (normal market condition)} \\ & \Sigma(\text{Distributions from Illiquid Assets}) \\ & \Sigma\left(\frac{\text{Employer}}{\text{Employee}} \text{Contributions}\right) \\ & \Sigma(\text{Investment Income}) \end{aligned}}{\begin{aligned} & \Sigma(\text{Benefit Payments}) \\ & \Sigma(\text{Capital Calls for Illiquid Assets}) \\ & \Sigma(\text{Plan Expenses}) \end{aligned}}$$

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

SCERS Liquidity Coverage Ratio – LCR

LCR 2020

Liquidity Available	Liquid Diversifying + Liquid Risk Assets	\$	7,850,948,075
	Distributions from Illiquids	\$	3,277,740,866
	Employer + Employee Contributions	\$	2,228,046,966
	Investment Income		
Liquidity Needs	Benefit Payments + Plan Expenses	\$	3,336,426,310
	Capital Calls	\$	3,275,061,579
	UAAL Amortization	-	
LCR			2.02

New liquidity model does not calculate an LCR in the same way as in prior years.

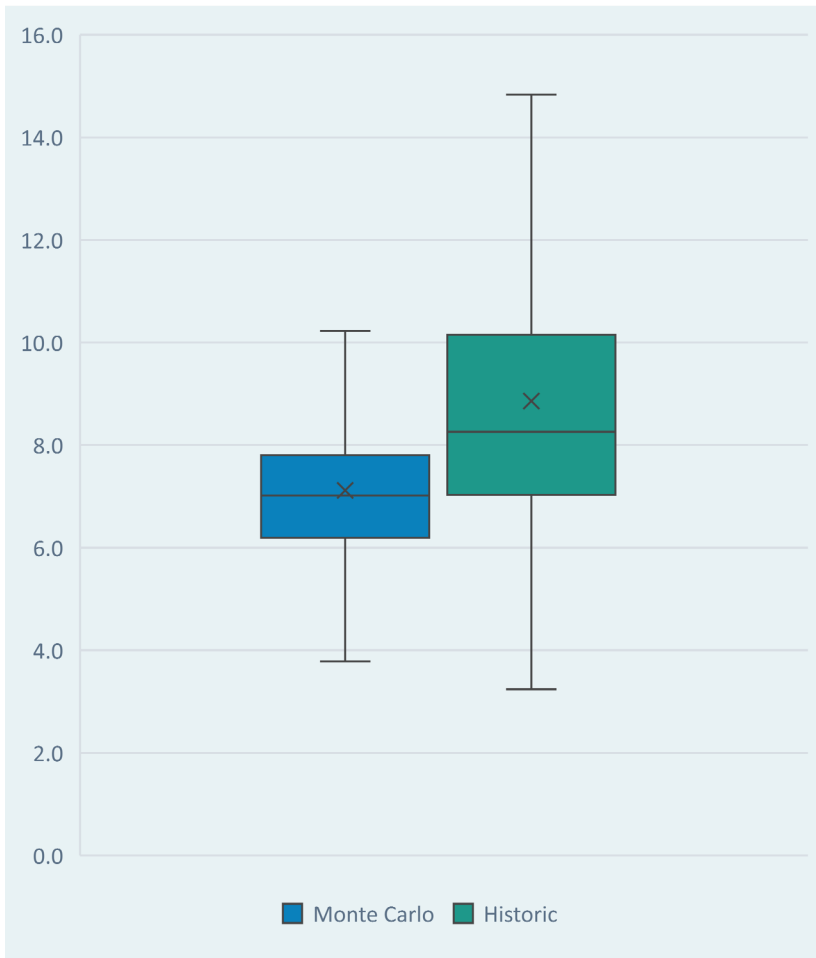
The projected LCR of 2.02 will differ from our updated LCR measure as seen on the next page

LCR 2019

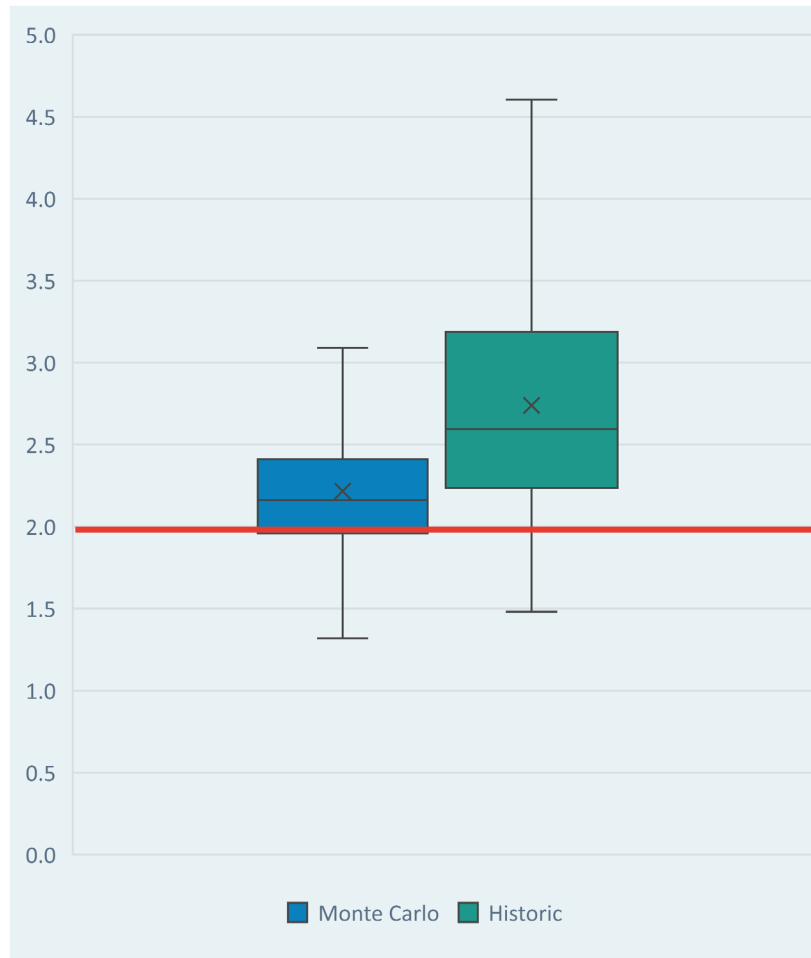
Liquidity Available	Liquid Diversifying + Liquid Risk Assets	\$	7,991,664,347
	Distributions from Illiquids	\$	2,661,111,175
	Employer + Employee Contributions	\$	2,130,977,480
	Investment Income	\$	922,486,918
Liquidity Needs	Benefit Payments + Plan Expenses	\$	3,073,533,430
	Capital Calls	\$	3,059,364,635
	UAAL Amortization	-	
LCR			2.23

Liquidity Coverage Ratio - LCR

1-YEAR LCR



5-YEAR LCR



5-year LCR median outcome is 2.2 with 50% of all observations between 1.9-2.4

- Actuarial information provided by Segal
- Private market projections for capital calls and distributions provided by Cliffwater and Townsend

SCERS Modified Liquidity Coverage Ratio – MLCR

MLCR 2020

Liquidity Available	Diversifying Liquid Assets	\$	2,113,716,789
	Distributions from Illiquids	\$	3,277,740,866
	Employer + Employee Contributions	\$	2,228,046,966
	Investment Income		
Liquidity Needs	Benefit Payments + Plan Expenses	\$	3,336,426,310
	Capital Calls	\$	3,275,061,579
	UAAL Amortization	-	
MLCR			1.15

MLCR includes the following in liquid assets:

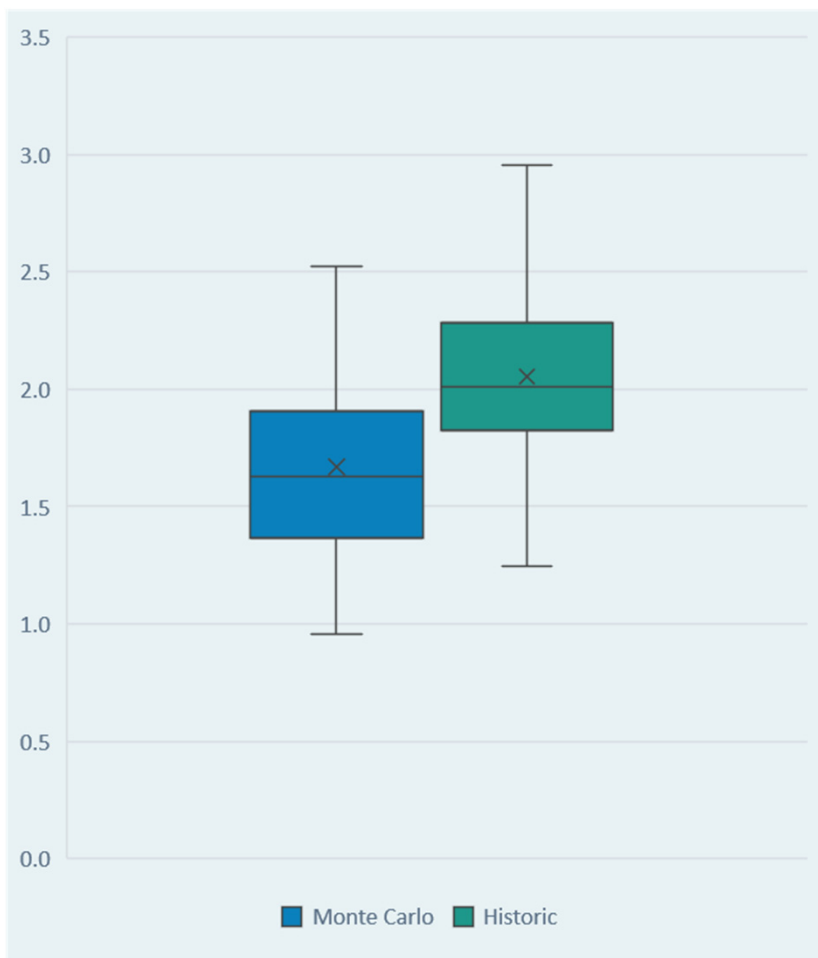
- Core Fixed Income
- Treasuries
- Global ex. US Fixed Income
- Liquid Real Assets
- Cash

MLCR 2019

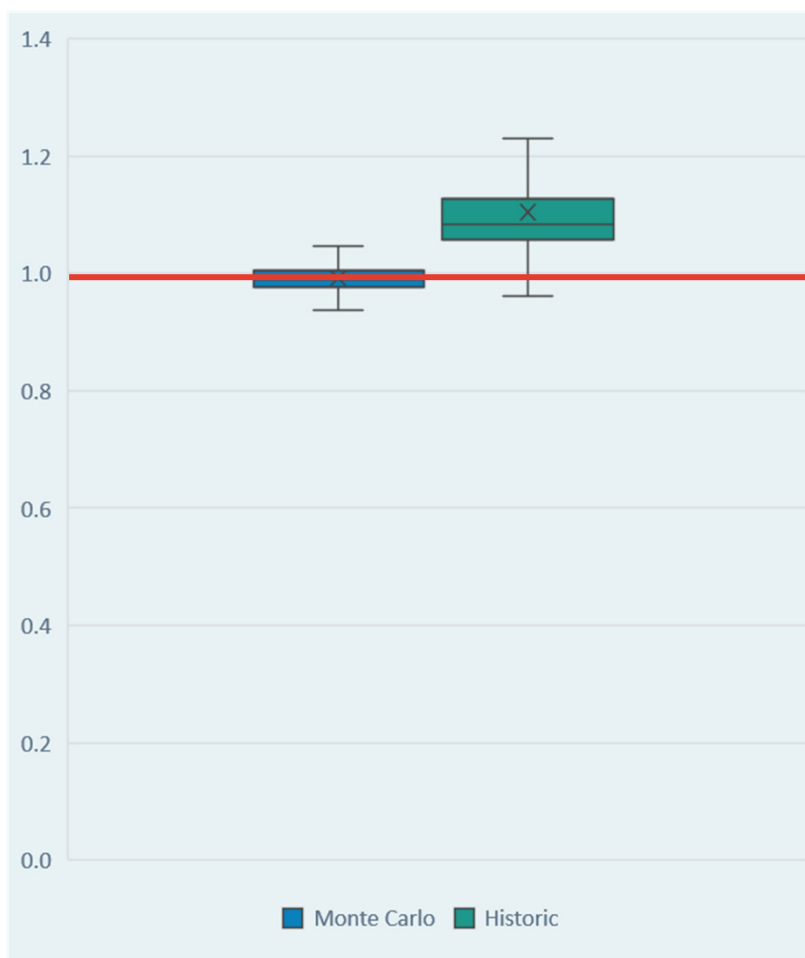
Liquidity Available	Diversifying Liquid Assets	\$	2,014,319,174
	Distributions from Illiquids	\$	2,661,111,175
	Employer + Employee Contributions	\$	2,130,977,480
	Investment Income	\$	922,486,918
Liquidity Needs	Benefit Payments + Plan Expenses	\$	3,073,533,430
	Capital Calls	\$	3,059,364,635
	UAAL Amortization	-	
MLCR			1.26

Modified Liquidity Coverage Ratio - MLCR

1-YEAR MLCR



5-YEAR MLCR



5-year MLCR median outcome is 1.0 with 50% of all observations between 0.9-1.1

- Actuarial information provided by Segal
- Private market projections for capital calls and distributions provided by Cliffwater and Townsend

Summary

Compared to last year, both the LCR and MLCR were lower due to the following:

- Liquidity model was updated in 2020 with material changes in how the model measures liquidity
- Higher benefit payments relative to contributions*
- Higher allocation to illiquid assets
- Eliminated an assumed 2.0% income from the portfolio
- Increase in projected capital calls

* SCERS' contribution rate will go up in 2021 which will improve the Plan's liquidity position. We will re-run the liquidity model early next year to measure the impact of higher cash inflows.

Recommendation/Next Steps

Both the LCR and MLCR decreased relative to 2019 measures, but SCERS remains in a healthy liquidity position

- SCERS has ample liquid assets to meet cash outflows over a 5-year period
- No actions recommended

Follow-up study in 2021 as part of next asset liability modeling (ALM) study

- Will incorporate updated contribution rates
- Output of liquidity study an important input of ALM study
 - Liquidity profile of the plan impacts level of private market assets that can be held